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BOARDWATCH

MAGAZINE

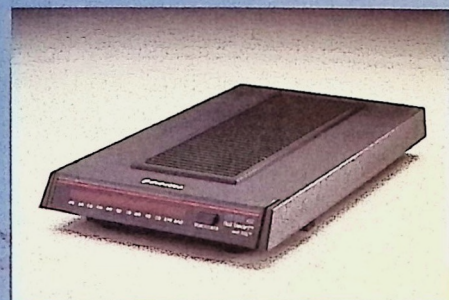
Guide to Online Information Services and Electronic Bulletin Boards

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BULLETIN BOARDS

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Chris Anderson
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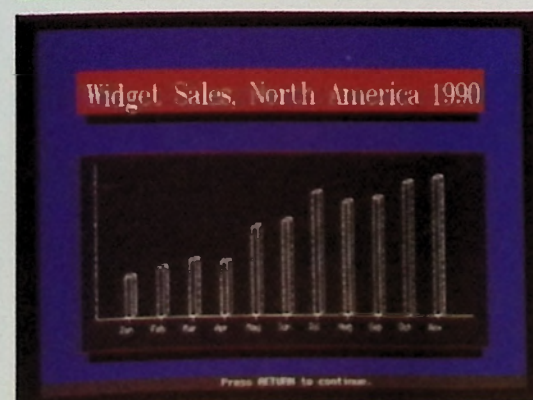
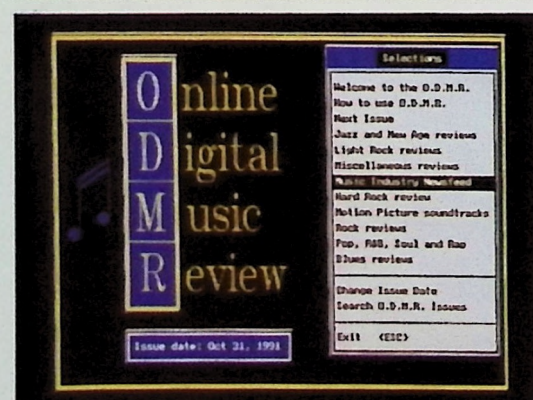
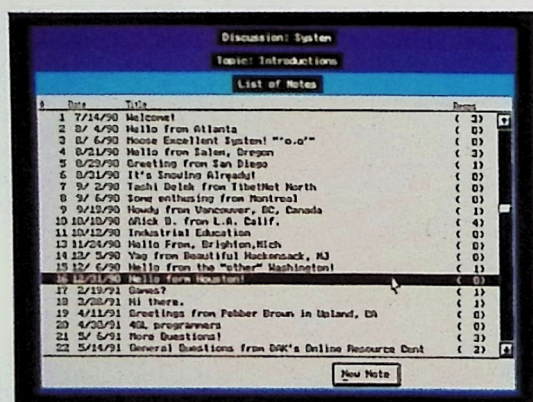
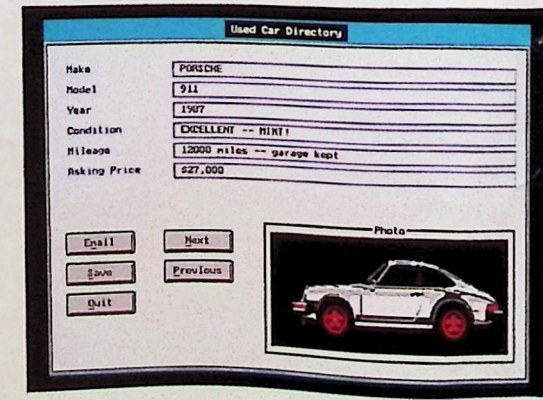
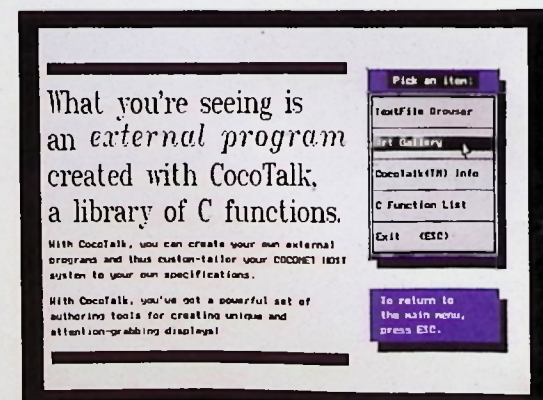
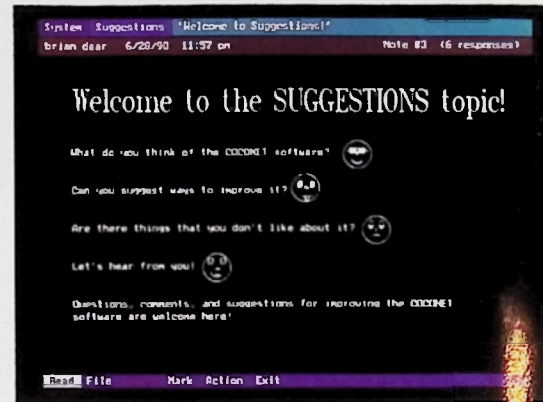
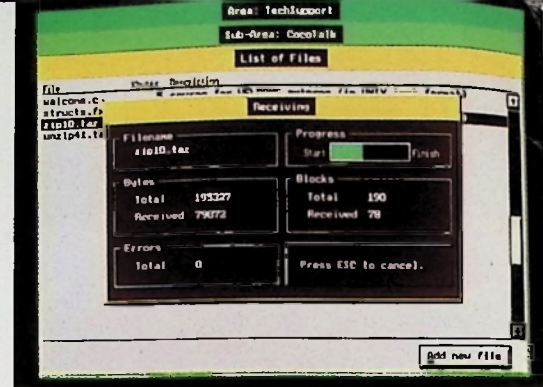
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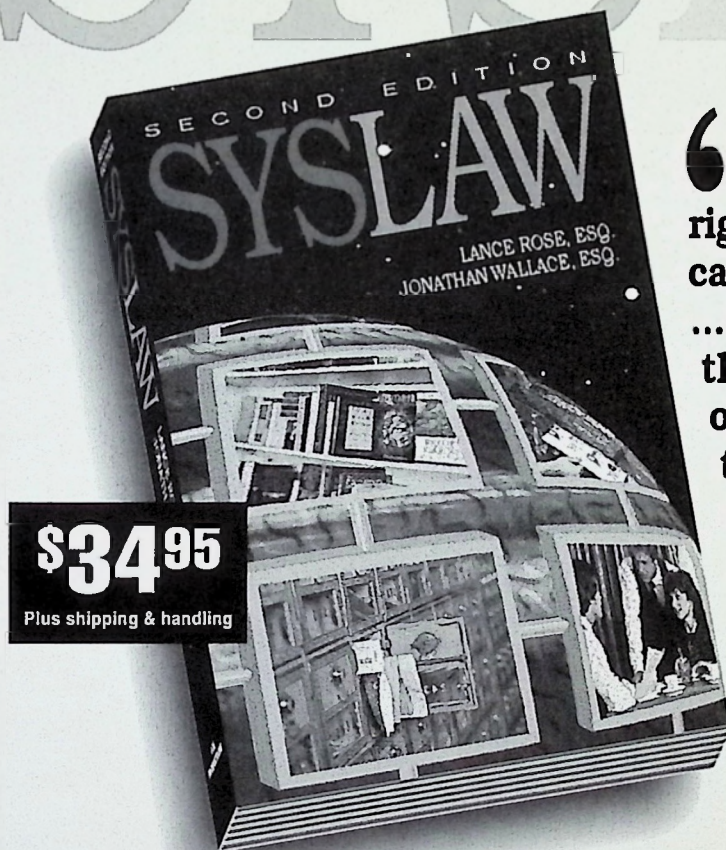
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JACK RICKARD
EDITOR and PUBLISHER
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EDITOR'S NOTES

This issue, we revisit our source with an examination of the International FidoNet. This is a familiar landmark in that we've followed it since our first issue in 1987, and watched it grow from a few hundred systems to the nearly 16,000 bulletin boards today. It spans continents and connects continents. It probably services some four million callers. Yet it has no corporation behind it, no centralized structure, no fees or memberships to tender. Holding true to Tom Jennings's original vision, it is quite thoroughly anarchical, and has resisted every attempt to tame it.

This may hold some dust of wisdom for the future. The ability to communicate implies the ability to organize. But our thinking regarding organization must change. The concrete and visible become a bit ethereal once you begin to simulate society in an electronic world. The visualization of CyberSpace as a meeting place has a bit of a problem. It doesn't exist physically beyond a few whirring disk platters, and tones drifting across telephone lines at night. Yet we have the feeling we can meet there. We DO meet there. And those meetings affect in a very direct way very physical things in our lives such as where we live, our profession, our social contacts, and our view of the world.

Likewise, our concepts of economic value must change. When we buy a loaf of bread, the movement of something of value from the shelf to our grocery bag is quite clear and we exchange money for it in return. But what if you bought a loaf of bread, and took it home, but the original loaf still remained on the shelf for someone else to buy? And if you gave your loaf to your neighbor, because he had no bread, and you still had yours after you gave it to him? The value of loaves of bread would decline rather significantly once the world learned they could feed the 5000 at will from a single loaf. But would anyone then make bread?

Every transaction in this new world must be negotiated first on who pays whom, and then in what amount. It simply isn't as simple as a loaf of bread. If

you run a system that lists restaurants in your area and you want to carry the full text of their menus online, should you pay the restaurant for the information and the right to post it? They created this information. They hold copyright to it. And they put a lot of work into it. Or should they pay you for advertising their restaurant? They need customers. You provide this information to people who then go to the restaurant to eat. You're basically promoting their business. If they give you their information, they still have it themselves. And if you send them a customer, you don't lose a thing either. But some payment seems due, in one direction or another.

There is no "common sense" here. Television stations pay for programming, and receive payment from cable subscribers, and from advertisers. But this could just as easily be reversed where programming studios paid to be on television, and paid advertisers to produce the programs - and charged the end viewer for the equipment rental to watch the TV. It evolved the way it did, and is still changing, based entirely on perception and salesmanship. It is essentially contrived, but accounts for hundreds of millions of dollars in revenue passing in several directions at once.

Likewise, organizational structures have to be revisualized. Most of the current angst over commercialization of the Internet derives from the fact that no one has a very clear or persuasive vision of who should pay whom and for what. The vision that there is gold in them thar hills somewhere is pretty strong, but everyone is suspiciously looking to everyone else - ready to cry foul at whatever is suggested, without a very clear view actually of what they want themselves.

Forgive me if I enjoy it all just a bit. Within a few years, there will be clearly defined patterns, rules, and the usual government law passing frenzy to protect various individual economic interests. You can always have a business by getting the government to pass a law guaranteeing you one - though the ante to buy a Congressman these days is pretty steep. And without solid value flows, future businesses and economic patterns will almost entirely be at the whim of our legislative leaders. The

telephone companies have bid the going rate way up. This spring, they showed their finest in actually having a bill that was written, sponsored, and designed to prevent them from entering information services, converted overnight in Congress into a bill specifically allowing and encouraging them to enter information services. The brazenness of the act caused even our normally ever-ready-to-vacillate politicians to stammer in embarrassment that these things were really quite complex issues and they really did know best - trust them. They really did finally reach the point in our law making body to have the grace to at least appear embarrassed as they helped themselves to just one more, and rather obviously too many, cookies from the jar.

But for the immediate present, chaos reigns in Cybersville. The electrosphere is all lit up with people trying to sell the concept that you should give them money for something you're not sure they shouldn't pay you to take. And the confusion and anarchy are really a thing of beauty unto themselves. It is truly a boom town on the frontier and probably the best and most exciting of times - on the frontier of an electronic age. Many pioneers here will make a fortune, and others will lie at the side of the road with arrows in their backs. Many of us have struggled to bring this all into being almost by dint of force of will. The inevitable settlement by the "townies" will be saddening.

And all of this brings us at last to the Heatherington 302 patent granted Hayes Microcomputer for escape sequences. Bringing law to the frontier is a sobering development. Ward Christensen gave us the BBS and XMODEM, the ubiquitous file transfer protocol. And he did really give it to us, XMODEM was placed in the public domain immediately. In those days, the personal computer culture was such that most information, and certainly the negligible incremental advances were shared by all.

Hayes also gave us the AT command set, but now it would seem, they want it, or part of it, back. Just a few milliseconds on either side of the +++ symbols actually. A kind of Dennis Hayes retirement annuity where everyone in Cyberspace coughs up a nickel each time

their modern pauses to reflect and consider whether this is just a bunch of data, or whether we really meant it.

Lotus Development, too, has prevailed against Borland International in their look and feel copyright suit. It is pleasant to live in a land where inventions and creative work are protected by law. But in too many cases, the inventions at hand are incremental enough, that it certainly seems a burden on the rest of us. From here on out, if you are tempted to stand on the shoulders of giants so that you may see far, watch out that he doesn't turn his face skyward to bite you in the ass.

Jack Rickard

LETTERS

Dear Jack,

Your lead editorial in the June issue - The Vision Thing - hit home for me - because of your emphasis on economic policy. The economy, of course, is a dominant issue in this year's election campaign, and the expectations of many Americans over their standard of living for themselves and their children is growing from concern to alarm; people are reaching out for answers. Your suggestions for better education and developing the infrastructure for a national information highway are, I agree, in the right spirit for finding a solution to this economic problem; but economics is never simple, and I wanted to add some comments which I hope may clarify the issues a little more -- economists' reputation for clarity notwithstanding!

I personally have been searching for years for the correct mental paradigm with which to tackle this problem of the shrinking economic pie and have found much illumination in Robert Reich's recent book *The Work of Nations* (Vintage Books, 1992, \$12.50 paper). Your suggestions are much along the line of his thinking, but let me tell you more.

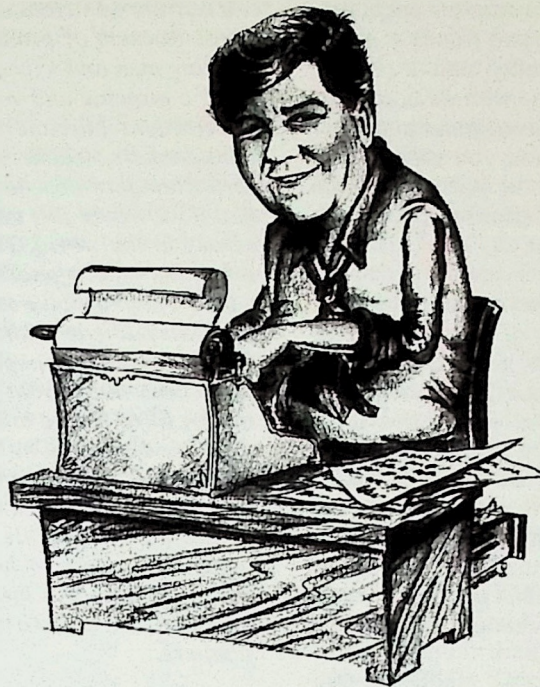
You are very correct to emphasize the commoditization of many markets, and how global competition is eroding the

profits in them. But you can't blame corporations for seeking the least cost means of production. Americans attempting to compete in those job markets are simply finding out the hard way how hard life is for the majority of the population on this planet, and that our national wage and price structures were artificially elevated during the post-WWII boom when the United States was the undisputed military, economic and political leader.

But not all Americans; those fortunate enough to have jobs as what Reich calls symbolic analysts have seen their incomes growing. Symbolic analysts have jobs that use information to rearrange symbols and produce a solution to someone else's need -- preferably someone with lots of money to pay for it. Programmers, designers, innovative managers, and, especially, financial professionals and lawyers, are all examples. Their work has value because it is tailored to a precise need; once the need is identified, all other aspects of actually producing the product, if necessary, can be farmed out all over the globe. But to have a job in this area requires the best education; mediocre educational programs (the majority) do not teach children to symbolically analyze reality.

And we all know what it costs to get the best education in America. The bottom line is that families with jobs in this area of the economy are getting richer while the poor are getting poorer and the middle class is getting munched if they can't make the leap to those symbolic analyst type of jobs. Reich suggests that this is aggravating the already unequal income distribution not only in this country but the world over. Much evidence indicates that income distribution became more unequal in the U.S. during the 1970s and 1980s, as Reich documents.

The other critical aspect is the decline in public investment, which ties to your plea for a national information highway. The powers that be invest in the public good when it is in their interest to do so. As noted on other pages of Boardwatch, belief in meaningful political representation is reaching new lows (and not only in the U.S.). When your own income and lifestyle do not depend on your country, you are probably not all that interested in getting taxed for the public good of your country. Thus the political will of the elite to fund programs for the public good -- which would require increasing taxes where most of the wealth lies -- has been lack-



ing, and is rather more in favor of "more markets" and "economic freedom", i.e. lower taxes, less government spending, etc. Combine these two trends -- growing income inequality and shrinking public investment -- with an accelerating computer technology and manufacturing processes, and you will end up with a society such as William Gibson described in his definitive cyberpunk novel *Neuromancer*.

Thus, I would add to your discussion the growing inequality of income distribution for the reasons given above, their political consequences, and the fact that this will require a global approach because it is happening among all nations. The carving up of the vision of NREN among the telecom giants is a perfect example of this trend and deserves strong public debate. Your call for visionary leadership that puts faith in people instead of corporations is not alone.

Sincerely,

Hugh R. Casey

Hugh:

I agree that economics is never simple - at least to economists. Those who face its consequences most directly find it brutally simple. If I understand what you are saying correctly, we can cure this little competition/structural change by raising taxes and making sure the government redistributes the wealth "more equitably?"

You might have found the recent Democratic National Convention a productive field for this theory Hugh. Over 70% of the delegates receive their living from the largess of some government program or another and over a quarter of them were, like yourself, basically school teachers. From what I saw on C-SPAN during the endless minority reports, they were arming to protect themselves from those who seek to get our education system back into the business of teaching our next generation to read well enough to at least get into the right bathroom and do arithmetic well enough to at least sell hamburgers when the computer goes down. They look organized enough to win this battle - and of course we lose.

The only wealth distribution problem we have, Hugh, is the ongoing and accelerating redistribution of wealth out of the pockets of productive, creative, working men and women into the pockets of a growing and voracious army of government bureaucrats, grantsmen, think-tankers, teachers, and other assorted hangers-on who honestly believe that if we would just give them ALL the money in the world, THEN they could solve this little economic problem. It is a little tough to solve such a problem or stem this pathetic madness when the full time job of half our population is to suck up a little more from the public cash trough filled by the other half, who are a bit too distracted by the task of trying to work for a living and raise a family to rally and organize at political conventions. I call this the "parasitic leachism" theory of how you take the strongest economy the world has ever seen and turn it into a nation of working paupers.

The "haves" in the have/have not equation are those who "have" a government position. But worse, the gentlemen of wealth honestly come by, whom you castigate so self righteously, are taking their marbles and going home rather than letting you confiscate them. In the process, they aren't investing those marbles, they aren't driving innovation and productivity, they aren't creating new businesses, and they aren't hiring anyone. They're laying them off. And if government COULD get those marbles, it wouldn't do any of those important things with them either.

Our wage structures weren't "artificially elevated" - ever. American workers worked harder and smarter than any group of humans ever seen on this planet - and they did it for hundreds of years. They dug rocks out of soil so poor it would break your heart and leave just enough of your back left to do it again tomorrow. They pulled stumps, they mixed mortar, they laid bricks, they felled trees, planted crops and harvested crops, fought with their mules, cleaned out ravines, built houses, built cities, built roads, fought wars, and out of all invented very nearly everything you see around you today. They took land nobody wanted and turned it into a thing of beauty. They worked six or seven days a week and did it from sun up to sun down. I've seen them standing

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in the sun stained black with sweat with their legs shaking from fatigue, salt rings under their armpits - taking a moment for a sip of water and a minutes breath so they could go back and do it again. Their bodies covered with hay dust, stung by wasps, alternately blistered by sun and drenched in icy rain. Standing at midnight in a blizzard up to their elbows in cow - fighting to save a single calf in birthing. They dragged trains through snow drifts, fought floods with sandbags, fires with drenched burlap, and drought so severe it blew the land out from under their feet

with nothing but a prayer. They ferried millions of tons of material by barge, truck, wagon, or on their backs if they had to. Many of them saw everything they had built wiped out by depression - or inflation - and still they worked, and built again.

Collectively they built cities that to anyone from another land look like crystal jeweled palaces rising out of the prairie. They didn't do it for a month, or a year - many worked like this till their friends tearfully lowered them into the ground and said a few words on their behalf - before returning to work themselves. They did it to build a life for themselves, and a better one for their children.

And it brings me to the point of vomiting through my tears to think of it destroyed forever by a bunch of effete, theory-postulating sycophants in suits - determined to rectify a "wealth distribution problem" by renaming government confiscation as "investment" and assuring us that economics is never really "simple" - trust us.

"Thus." How's that for an economic theory Hugh?

Jack Rickard

Dear Jack,

Your July editorial was a breath of fresh air. I wish there was more use of the G word too. Why is everyone so afraid of God these days? Freedom of speech is OK as long as you're not speaking about God. Public perversion is OK -- public prayer is not. Who lost their freedom of expression in the latest supreme court ruling on school prayer? We, the people did. Today the tail wags the dog. The minority gets the press, the pity, and the "protection." The majority gets the shaft and pays the bill. We've gotten so open minded our brains have leaked out.

Every year I go see the fireworks with my family on the 4th of July. And it seems every year there is a little less feeling -- a little less pride as we sing the Star Spangled Banner. Good grief, pretty soon we'll be apologizing for trying to be patriotic or traditional. Our foundations are being stolen away and we're letting it happen. We're content to

let Dan Rather do our thinking for us. Can someone please tell me how one day we woke up and suddenly had to be "politically correct?" What does that even mean?

I enjoy this world of BBSing/Internet-ing as much as anyone. It's a terrific way to exchange ideas. But even the casual observer can quickly see the large proportion of "alternate" drivel in the electrosphere. "Adult" chat lines -- come on. No, I don't propose censoring the Internet of alt.sicko. I'm just observing a microcosm of the larger world around us. It's a world that really does need something to believe in. Something they can trust that doesn't change according to the political/economic climate. C'mon folks, try the G word.

Vince Dugar

Dear Vince:

Amen.

Jack Rickard

Dear Mr. Rickard

Just a quick note to let you know how much I am enjoying my new subscription to Boardwatch Magazine. Your writing has a thoughtfulness that makes it head-and-shoulders above all the rest; certainly yours is the only computer mag (and nearly the only mag!) that leaves me feeling that my time reading it has been really well spent. Congratulations and keep up the good work!

As a recent purchaser of a v.32bis modem, I found your discussion of hi-speed comm under Windows in the June issue extremely interesting. For what it's worth, on my system at least hi-speed V.32bis under Windows works great. My modem is the new Intel SatisFAXion 400 internal, which contains a whiz-bang custom "smart UART" with 512K RAM and a dedicated 16 MHz 80186 coprocessor. The UART, which requires no special software support (it appears to be a 16450 to comm apps), has what amounts to a giant 16550 FIFO buffer - instead of 16 bits, you get as much as you need AND all the processing is done via the dedicated 80186.

I don't know how it works in any detail, but work it does. I routinely download with both DOS and Windows comm apps in the background and get transfers in the 1600-1700 cps range. I've run several disk-intensive processes in the foreground (e.g., WFW 2.0, QWKMerge...) with no problems whatsoever. Unlike my former 2400 baud modem, I just can't get the new V.32bis modem to choke. The fax works too; not bad for a small premium over the Supra.

(FWIW, my system is set up to run Windows quickly - 486/50 with local-bus S3 graphics. I also use Turbocomm. Still, on this system I needed Turbo-comm to get reliable 2400 baud background communications; using the new Intel V.32bis it hums right along.)

Another "faxmail" BBS you might want to consider is Intel's own FAX BACK service. Their FaxBACK number is 800-525-3019. Document 9016 is an overview of the SatisFAXion 400. 9004 is Fax and Modem product overview; there are loads of other topics too.

Andy Carpenter
CIS 75146,1155

Dear Andy:

The buffered approach is clearly the technical solution to this problem. I find it a bit difficult to swallow that we have to run 50MHz 80486 computers to host ANOTHER 80186 computer with 512KB of RAM to do work around this seriously broken software. But it would appear we will have to.

Windows, and to a lesser degree OS/2, have demonstrated pretty ably that the market demands both graphic interfaces and multitasking. Unfortunately, neither program demonstrates software that can accomplish either - much less both. I fear we face two years of running simulated operating systems - that is, software that purports to be a computer operating system and routinely fails to operate. Recently, I've been devoted to converting a good bit of my operation to work under Windows - knowing full well that it hasn't a prayer of working. We're losing several hours of effort weekly now from work that has gone "out the Window" and have systems all over the

office giving up the ghost hourly. We're wearing the spots off the RESET buttons.

My hope is that the economic power of some 14 million Windows sales will inspire the powers that be to fix this software as quickly as possible. But the nature of what this is doing and the historical debris of earlier operating systems it must drag along in the process lead me to believe that the first fully operational GUI multitasking software that is even modestly reliable will be two years out. We'll limp along somehow until then, and yes, perhaps the other vendors will patch and fix a bit here and there in the meantime.

Intel has done a fine job with their modem designs. They are purple with rage at me for publishing information in April about their 400/e before they had released the information. But they're putting out some pretty good modems and fax boards and we're pretty unconcerned about their skin coloration.

Jack Rickard

Dear Jack:

First, even though it might sound like a trite cliché, please let me tell you how much I enjoy your magazine and your journalistic style.

Second, how about doing either an article or issue on bulletin boards in the Indianapolis area?

We are no longer "Indiana-No-Place", and I think you'll be pleasantly surprised.

The Indiana University-Purdue University at Indianapolis Bulletin Board maintains a list of bulletin boards in the Indianapolis area. Their data number is (317)274-2405, and they run RBBS-PC at Warp Speed on a single node of a network which I believe is VAX based.

After connecting, you need to enter "BBOARD" to access the bulletin board. It's a busy system, so you may have to try several times to get in.

Thanks for your time, and I look forward to your next issue.

Yours sincerely,

Alan Routier
Indianapolis, Indiana

Dear Alan:

Thanks for the info on the Indianapolis BBS situation. I was not aware that it was ever considered "Indiana-No-Place" but where there are modems blinking in the night, we will be there. The problem is that there are getting to be a LOT of modems blinking in the night in a lot of places. We'll try to cover Indiana as soon as we can.

Jack Rickard

Dear Jack:

I couldn't help but think of your July editorial in church yesterday morning.

The sermon title was "The Known and Unknown God" (text Acts 17:22-23), we sang the hymn "To God be the Glory" and this line was in our call to worship: "it is another day that God has given to us."

We talk about God a lot in my church (First United Methodist Church of Green Bay, WI), both the pastors (we have two) and the congregation. And we don't just talk about Him, but we try to live our faith in various ways. For example, we operate a neighborhood food pantry, sponsor a volunteer group that works with children in a low-income school near-by, and we were one of the collection points for food boxes that were sent to Russia recently.

Why don't a lot of people talk much about God anymore? For some of them, it's probably because He doesn't really matter in their lives on a daily basis. If you think of God (when you think of Him at all) as some distant power who has no relationship to your personal life, then there's really not much need to talk about Him. But if you think of Him as a friend who loves and cares about you, as a power who is important to you in a very real and personal way, then talking about Him is no different than talking about a person you love.

I do think that some people who truly love God hesitate to speak up for fear of being identified with the people who talk loudly of God and Christ, but whose behavior is far from Christ-like.

I read somewhere once about missionaries who, when they entered a new village, did not immediately begin to preach. Instead, they quietly did whatever was needed to help the people. Eventually, someone would ask them WHY they were doing this, and then would talk about Christ and the example he sets for us. The point here is that just talking about God is meaningless unless our actions back up our words. And no, we can't all be missionaries, but we can be decent, caring people to everyone whose life intersects with ours.

I love God. And if my saying His name offends someone, that's their problem. (But then, I'm not running for office!!)

Btw, I love BOARDWATCH Magazine and the personal, caring flavor you give to it. Keep up the good work!!!

Donna Zelzer
Donnazelzr@aol.com

A touching letter Donna. And a heartening one. I strongly suspected, and this has largely been born out by our mailbag this month, that the vast majority of American families - even online families - are more in your camp than in the other. But the volume from some of the tiny but shrill extremist groups IS intimidating, and I think most of our communications media is either tacitly or overtly buying into this point of view. The problem is that who we are as a society is filtered powerfully by who we tell ourselves we are - and our television networks and magazines are doing too much of the telling.

I love God too Donna. And if my saying His name offends someone, they'll have to take a number behind all the online vendors whose name I've taken in vain so regularly. But you're quite correct, it's probably a good thing neither of us are running for office.

Jack Rickard



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Dear Jack:

I usually enjoy your editorials, although you might not guess it from my letters. Your ideas don't always appeal to me, but the wise cracks are first class. American politics has a graveyard air nowadays, and I'll take my laughs where I find them and thank you.

Nevertheless, I can't help feeling that you went too far in July. The oddest damned image keeps popping into my head. It's like I can see you, Jack, sitting at home watching *The Tonight Show*: the host is working over Dan Quayle in his opening monologue; he's almost done with the unfortunate VP when you suddenly leap from your armchair and go tearing out into the street, in search of a Catholic church. And it's not right, Jack! It's **WRONG** to laugh at another's religious faith, or at his obvious lack thereof. But I still can't help grinning, and I can't help thinking that I'm not the only one at fault.

Could it be that mixing religion into political debate degrades them both? Imagine the descent from the cross as discussed in the context of falling interest rates. But perhaps there's more at question here than a question of taste. How much difference is there between calling out "Fire!" in a crowded theater and "Unbeliever!" in a crowded mosque? I don't know a certain answer to this, and I haven't run across anyone worth listening to who claims to have it all worked out. The framers of the constitution made no such claims. Nevertheless, when they finished with prescription and got around to proscription, their first priority was to prevent forever the state establishment of religion - not of "a religion," but of religion in general. Their concern is easy enough to understand, considering the civil wars and slaughters of Catholic vs. Protestant (unresolved to this day) which they left behind in the British Isles, and that it was only a generation or two since harmless old women had been publicly burned in America for consorting with demons. Thomas Paine's *"The Rights of Man"* is a useful guide to their thought, notwithstanding some probable disagreements. (While Paine, for example, believed that sectarian "religious" violence was a form of insanity, I can easily imagine the Framers plunking for prison with his opponent Ed-

mund Burke.) But instead of quoting Paine, I'd rather bring in an outsider - if only to show that this isn't just American history and American heritage, but a contemporary world issue and about as urgent as they get. Without further ado, Jack, I'd like to introduce you to a man who is perhaps the greatest living expert on when not to use the "G" word: the celebrated humorist and religious writer Salman Rushdie. His nation and tradition are antipodes to us, but I think he offers some insight on a problem that puzzles us all. After 15 years of an astonishing world-wide religious revival, why is our religious heritage so marginalized, so unconnected to the mainstream political life? Does disestablishing religion mean a society without religious values? Is this enlightenment and democracy and what the Framers wanted?

David Lefly
Chicago, Illinois

David:

That is the most clearly written expression of confusion I've had the privilege of reading recently. It very densely and even artfully misunderstands a whole thicket of concepts. But it is a thing of beauty.

Do you actually believe our founding fathers, in attempting to separate Church and state, meant to outlaw religion? Is it then actually appropriate that Salman Rushdie, who is not celebrated anywhere that I'm aware of as anything other than a second rate hack who happened onto some much needed press in a very unfortunate fashion, in being vilified for his books, proves that you shouldn't speak or write about God without risking the wrath of Iranian terrorists, or I presume, other extremist groups?

Your vignette of me rushing to the streets in search of a Church as the result of Dan Quayle's gaff is unflattering, but humorous. Clearly you missed the point of the editorial.

I don't know anyone personally who questions the validity of separating religious considerations from government - not only to avoid the powerful conflicts you cite - but for the more appropriate reason of allowing freedom

and tolerance for differences in a society born of a polyglot of immigrants from a variety of lands, cultures, and religions. This is just not questioned that I'm aware of. I suspect we have gone too far in that this neutrality has become a religion itself - a religion of pantheistic atheism where only the worship of inanimate objects such as ozone holes becomes socially and even legally acceptable.

There is a dramatic difference between a government officially holding freedom of religion as one of its most sacred priorities, and a government who holds the practice of any religion as something to be stamped out - or at least hidden from public view. This is more common in totalitarian and communist structures. Likewise, somewhere along the line, we've mistaken the willingness of devoutly religious Americans to treat others with tolerance as a weakness itself to be exploited in fighting against God and religion in general. What that says ultimately is that gentle people are always at a disadvantage in dealing with barbarians, and while true, I would that it were not so.

Jack Rickard

In your section "Books and more books" you reviewed "Bulletin Board Systems for Business" in which was stated:

"It gets worse. Acoustic modems are defined as those that turn digital signals into sound over the telephone while with direct connect modems the data is never converted to sound waves??? (NOT!)."

I don't know if you are too young to remember these things, but I remember that when I picked up the telephone handset on an acoustic modem I sure heard a sound. And when I pull out the wire to my current modem I don't hear anything at all, no sound. I liked the multiple question marks. Our teen users use them a lot to make a point. If "(NOT!)" is the answer what do you think acoustic modems do? Or direct connect modems for that matter?

In spite of the unnecessarily scathing attack on that book your magazine is a very handy source of information. I hope you will continue your impartial examination of products and information.

Michael Lecuyer
Viola, Delaware.

Dear Michael:

This is precisely why this book drove me to distraction - and why I mounted such an "unnecessarily scathing attack." A great idea for a book - and full of so many dangerous inaccuracies that I have no idea how long I will be faced with people quoting this font of misinformation. With the number of people just coming online - who missed most of the history and technological development, authoritative sounding books full of technical errors are a disservice. Your letter pretty much confirms my worst fears - and it was necessarily scathing.

Am I old enough to remember it? Yeah, I guess so Mike. I'm also old enough to understand it. Acoustic modems do convert digital signals to sound. The problem with this book, and your letter, is that so do direct connect modems. That's what a modem does. (I can't believe I'm doing this, but here goes) - the word modem is largely contrived from MODulator/DEModulator. It takes digital signals and modulates them - actually converts them to audio tones so they can be transmitted over the telephone - an audio device. At the other end it demodulates them - converting them back from the received audio tones to digital signals. That's how we can move data over a telephone network designed for voice communications.

The move from acoustic couplers to direct connect modems isn't the worst of it. Quadrature phase modulation - and now Trellis coded modulation makes the "sound" a little less pleasant to the ear than the earlier somewhat musical tones - but it is indeed sound nonetheless. The reason you can't hear it is that you have your modem speaker on your direct connect modem turned off after carrier detect. There's plenty of noise going on. What happens when you pull out the wire to your current modem and listen to it is that you make a fool of

yourself - I hope privately - but it has nothing to do with whether or not modems convert digital signals to sound or not. They do, that's why you bought one. And it matters not a whit whether they are acoustically coupled or direct connect.

If a tree falls in a forest and there is no one there to hear.....

Jack Rickard

TELE-BITS

RUMORS AND TRIVIA

The march toward lower cost modems is on. Prodigy has been rumored to be flirting with 9600 bps connections as a way to improve the sluggish feel of their service - referred to by detractors as "Plodigy". Their \$49.95 package with Prodigy access and a 2400 bps modem was very successful - nearly 150,000 sold by the end of July. The new deal will include a 9600 bps V.32 model - rumored to be a Cardinal model - at \$99.95. That would certainly be the first sub-\$100 V.32 modem and a dramatic new price point in the modem industry. We've played with some Cardinal modems - they work.

SIMBA Information of Wilton Connecticut has issued a study titled *Online Services: 1992 Review, Trends, and Forecast*, written by Chris Elwell examining the growth in online services. The study claims sales of online services grew 61.1% over the past five years. More importantly, they claim sales will grow 48% overall over the next five years and some 145% in the consumer services market. By 1996 the industry should see \$14.2 billion in sales. As of the end of 1991, the group estimates 5.4 million users for the commercial online services - up 18% over 1990. They claim 20% of home computers are modem equipped.

Clark Development Company is rumored to be working on a multi-line version under Quarterdeck Office Systems DESQview operating system, allowing multiple telephone lines on a

single PC. This apparently in response to the June introduction of Mustang Software's Wildcat! IM package.

eSoft Development continues work on a .QWK mailer for The Bread Board System. Further rumors indicate they may support PCBoard style message areas to open up their message base architecture.

MOTOROLA INTROS NEW WIRELESS MAIL SERVICE

Motorola, Inc. introduced a new wireless mail service in July called Electronic Mail Broadcast for a Roaming Computer (EMBARC) capable of delivering electronic mail messages up to 1500 characters to anyone anywhere in some 200 U.S. cities.

The service uses a \$395 NewStream paging receiver connected to any laptop or portable - down to the tiny Hewlett Packard HP95LX palmtop. The service uses a satellite network to dispatch the message to the particular city and local paging service transmissions to transport the message to the NewStream receiver. The service is, of course, one way with users then dialing in via normal telephone lines to send or respond to messages. The EMBARC service starts at \$15 per month with a 13 cent charge for each message transmitted.

INTEL LOWERS PRICES ON 14.4 MODEMS

Intel Corporation has gained some favor in the online community with their Intel 14.4EX modem. The model features the CCITT V.32bis compatibility for 14,400 bps connections and both MNP 5 and V.42bis for error correction and compression.

Originally priced at \$699, Intel announced in July a price reduction of both the 14.4EX and the Intel Satisfaxtion Modem/400e to \$549. The 400e also features V.32bis/V.42bis but adds a fax capability to send and receive facsimile transmissions - it supports both CAS and Class 1 fax interfaces. They also lowered the price on the BBS



Intel 14.4EX Modem

operator discount program from **\$399** to **\$269** on the 14.4EX and **\$279** for the SatisFAXtion Modem/400e.

Intel's 14.4EX is an external, full-duplex modem featuring full compatibility with CCITT (International Consultative Committee on Telephone and Telegraph) V.32bis modulation and V.42 error control. Intel's 14.4EX also uses CCITT V.42bis data compression to compress data as much as fourfold, providing maximum throughput of 57,600 bps.

The company has been pretty progressive in putting their own products into play. They offer a FAXBACK service at (800)525-3019. This is essentially a voice mail BBS where you can "order" free product information that is faxed to your own fax machine. Follow the audio instructions to order document **9434** which provides information on the 14.4EX and **9016** for the 400e. You will be asked for your fax number and within a few minutes, the brochures and technical specifications come in on your fax.

They also provide a capable product support BBS at (503)645-6275. You can download information on their sysop discount program. Intel, 5200 NE Elam Young Parkway, Hillsboro, OR

97124; (800)538-3373 voice; (800)458-6231 fax; (503)645-6275 BBS.

HAYES OPENS GUNS OVER ESCAPE SEQUENCE PATENT

Early modems featured a wealth of switches and knobs. There were a variety of different approaches to transmitting bits over wires and the better modems accounted for most of them with hardware switches.

But modems, after all, were data transmission devices, and the obvious direction was to control them from the keyboard. The Hayes AT command set became a standard for controlling modems by command and most operating modes could be set from the keyboard by a combination of these commands and a series of S Registers - essentially memory variables - in the modems.

Since a user could command a modem from the keyboard by sending ASCII characters, and since modems were also used to transmit data containing ASCII characters, a bit of a conflict developed. How did the modem tell whether data from the computer was a command, or something to be transmitted?

The solution came to be known as an "escape sequence" - a series of characters that caused the modem to switch from data transmission mode to command mode and back. A variety of escape sequences were tried, and in the early days the Eaton escape sequence, developed by Dr. Michael Eaton of Bizcomp, was popular for awhile. The problem was that once in a great while, a file a user was transmitting would contain the precise series of characters necessary to duplicate the escape sequence - and the modem would kick out into command mode during a file transfer.

In 1981, Dale Heatherington, a Hayes Microcomputer employee, developed a technique where the modem would only detect the escape sequence if it had a minimum period of inactivity both before and after it. Referred to as guard time, this quiet period where no data came in was extremely unlikely during the relatively constant transmittal of data during a file transfer. And the guard period was short enough that anyone typing from a keyboard was unlikely to be able to do so quickly enough to NOT include the guard time with the command.

Heatherington used the three characters +++ as the escape sequence to put the modem into command mode. And the modem would only detect it as an escape sequence if it was delimited by this guard time. On October 25, 1985, Hayes was issued U.S. patent number 4,549,302 for the Improved Escape Sequence with Guard Time. It is widely known as the Heatherington 302 Patent.

In the early years of this decade, the name Hayes was synonymous with modem and anyone manufacturing a modem literally had to guarantee Hayes compatibility to sell any. But in recent years, Hayes has been asserting its rights to the Heatherington patent rather successfully. A group of modem manufacturers known as the Modem Patent Defense Group waged a long battle, but on January 25th, 1990 the final blow fell. A San Francisco jury returned a verdict upholding the Hayes patent in a suit against Everex, Ven-Tel, and Omnitel. Federal Judge Samuel A. Conti

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approved the \$1.4 million in damages and then some based on the willful nature of the infringement.

Everex and Omnitel subsequently licensed the technology from Hayes, and Ven-Tel left the business. Subsequently, AT&T, Telebit, U.S. Robotics and a host of others have licensed the patent as well. Hayes claims over 26 million modems have shipped either under their own manufacture or from licensees. Most recently, Hayes announced on June 1 that Rockwell Modem Systems has licensed the patent for its modem chip sets and any modem manufacturer using the Rockwell chips is automatically covered.

But there are some hold outs. Multi-Tech Systems, Inc. being the largest. They have banded together to develop an alternative escape sequence they call the Time Independent Escape Sequence or TIES. The theory of this escape sequence relies on the fact that modems basically are computers today - many featuring powerful Motorola 68000 microprocessors and large data buffers. By carefully scanning for the escape sequence, TIES performs the escape sequence function without using the

guard time technique. The odds of this sequence occurring randomly in a data file become fairly astronomical - and TIES likely works reasonably well.

The matter boiled over in July. Hayes took advertisements in a number of publications implying that modems using TIES were "time bombs" waiting to go off and that user's data was endangered. The ads were more than a bit alarmist, given the astronomical odds of it actually happening. But Hayes took care of that by offering a "test kit" - essentially an ASCII text file containing the TIES escape sequence. Callers could get the kit at no charge and attempt to perform a file upload of the file. It would, of course, trigger the escape sequence and they would have the impression that their modem was fatally flawed.

Multi-Tech took the matter to a Minneapolis court and on July 29, it issued a ten-day order barring Hayes from shipping the Test Kit. Multi-Tech claimed that Hayes' recent education campaign about modem escape sequences and the related Test Kit were causing Multi-

Tech to lose sales. The court refused to order a halt to the advertisements or to extend the ten-day order.

Hayes of course claims that any modem that uses a "reliable" escape sequence could not be stopped by the transmission of a simple ASCII text file.

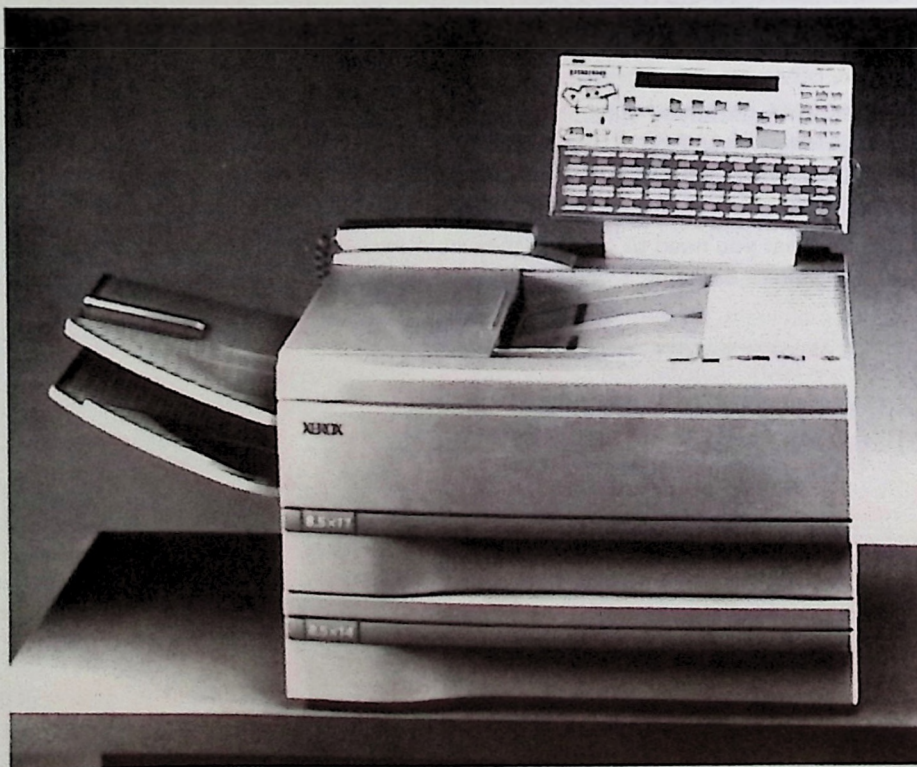
Hayes will likely take some heat for the largely misleading ads. The TIES modems are neither "dangerous" nor is "untold chaos" likely to result from their use. The chances of real world incidents involving TIES mishaps are laughably minuscule and if it does happen a file transfer fails - little more. So many modems, including some of Hayes own Practical Peripherals models, have so many other functional anomalies that the TIES issue seems like small potatoes.

But ultimately we think Hayes will win the war over escape sequences. The Heatherington escape sequence is undeniably superior to TIES and with the number of modem manufacturers already licensed to use the technology, there is little incentive for callers to settle for technology "nearly as good." The license fees don't noticeably add to the price of the modems, and with Rockwell signing on in June, it would seem the battle is over. Modems NOT using the guard time technique are destined to become a rarity.

Those interested in following the battle will be able to download the test file from the Hayes product support BBS at (404)HI-MODEM - (404)446-6336 once the court order expires. Hayes Microcomputer Products, Inc., PO Box 105203, Atlanta, GA 30348; (404)840-9200 voice; (404)441-1238 fax.

XEROX INTRODUCES LAN FAX SERVER

Xerox Corporation has introduced a LAN FAX server for Novell Local Area Networks that allows anyone on the LAN to send or receive facsimile transmissions. The Xerox 7033 LAN Fax Server allows any PC on the LAN to fax a document by using a pop-up window on their screen while in any DOS or Windows application. The 7033 soft-



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Wildcat! IM Packages

WILDCAT! IM is only available in a 250 node configuration, and is priced at \$799. A special WILDCAT! IM+ package, which includes WILDCAT! IM software, DESQview 386/QEMM and a DigiChannel COM/8i serial card and cable, is package priced at \$1,999.

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The WILDCAT! IM version is specifically designed to operate with intelligent serial port cards from Digi International, Inc. The DigiChannel COM/8i, PC/8e or PC/8i cards make use of on-board microprocessor support for communication activities.

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ware supports **PCX** graphics, a graphics file format pioneered by ZSoft's PC Paintbrush program.

When sending a fax, users type a destination telephone number selected from an on-line dialing directory. Fax resolutions of up to 300 dpi are supported at 14,400 bps. Users are alerted to incoming faxes by a fax alert notice on their screen. Incoming faxes can be printed, stored on disk, or rerouted to another printer.

The 7033 is a plain paper fax machine, and can be used as an HP Laserjet compatible network printer to print ASCII, .PCX, or HP PCL files. It can also be used as a digital photocopier as well with enlargement (122% and 144%) and reduction (97%, 91%, 84%, 76%, and 50%) at a rated speed of five copies per minute. Additionally, it can be used as a 300X300 dpi scanner. The system requires 25-30 MB of disk space on the system server.

As a result, the Xerox 7033 combines printing, fax functions, photocopy, and scan functions on one unit accessible from anywhere on a LAN. Xerox is enormously proud of this unit at a list price of \$7895 for the package. Contact Larry Jones, Xerox Corporation, Xerox Square 05B, Rochester, NY 14644; (800)TEAM XRX; (716)423-5078.

U.S. ROBOTICS 16.8K COURIER DUAL STANDARD MODEM - A CLOSER LOOK

In our last issue, we reviewed the results of the **Boardwatch 100 Reader's Choice BBS Contest**. In nominating their favorite BBS, voters also spilled the beans on quite a bit of not very intrusive data about themselves - including the modems they used. We quickly abandoned the concept of tallying modem models, and got down to just modem brands. We were still astounded to find that the 11,152 ballots cast rendered some 379 different modem brands. There are a LOT of people out there making and selling a lot of different modems.



US Robotics 16.8K Courier Dual Standard Modem - \$1195

But the community of BBS operators has for a number of years been almost totally entranced with one brand of modem - U.S. Robotics. It is widely considered the modem of choice for BBS use and most BBS operators that DON'T use U.S. Robotics equipment on their bulletin boards do so because of the relatively high price of these modems - even under the sysop discount program - or because it just takes too long to get one shipped from USR under the program. Often, you can get TWO of the bargain priced modems for the price of a single U.S. Robotics model - and that makes the decision regarding which modem to buy very difficult. But if pricing were not an issue, there probably wouldn't be any modems except U.S. Robotics running on bulletin boards.

U.S. Robotics pioneered the concept of a discount for those who operated bulletin boards in 1984. It became a major factor in 1987 when the high-speed modem wars broke out. In those days, to do 9600 bps, you could only do it with others who used the same brand modem. USR's 50% sysop discount swung the BBS community completely.

Today, with 14,400 bps V.32bis modems available to BBS operators for as little as \$240, the USR models look pricey even with the sysop discount. But USR's latest model, the **16.8K Courier Dual Standard**, is ample illustration of the other half of the success equation. These people make a damnably good modem.

We purchased three of the new models for the Boardwatch BBS and put them through their paces. This is the best modem U.S. Robotics has ever made.

First, and most obvious is the addition of the **HST (High Speed Technology) 16.8K** mode. Like USR's first HST model, then 9600 bps, this communications link is asymmetrical - it will do **16,800 bps** in one direction only and offers a **450 bps** back channel. WHICH direction is the fast one switches back and forth at various times based on which direction most of the data is moving. The result for interactive screens is still a bit jerky compared with the symmetrical 14,400 bps V.32bis mode, but not so much as to really pose a problem. The magic here is in file transfers of

BULLETIN BOARD OPERATOR DISCOUNT PROGRAMS V.32 and V.32bis Modems

VENDOR	MODEL	LIST	SYSOP	BBS	VOICE	FAX
ATI Technologies	ATI V.32	\$699	\$350	416-756-4591	416-756-0718	None
Cardinal Technologies	9600V42 V.32	\$699	\$269	717-293-3074	717-293-3000	None
Computer Peripherals	Viva 9624e V.32	\$349	\$249	805-499-9646	805-499-5751	805-498-8306
Galaxy Networks	UFO V.32bis	\$999	\$299	None	818-998-7851	818-998-1758
GVC Technologies	FM-9696/144V V.32bis	\$689	\$413	201-579-2380	201-579-3630	201-579-2702
GVC Technologies	SM-96V V.32	\$599	\$329	201-579-2380	201-579-3630	201-579-2702
Hayes Microcomputer	Ultra 144 V.32bis	\$1199	\$599	404-446-6336	404-840-9200	404-449-0087
Hayes Microcomputer	Ultra 96 V.32	\$999	\$399	404-446-6336	404-840-9200	404-449-0087
Hayes Microcomputer	ISDN System Adapter	\$1599	\$799	404-446-6336	404-840-9200	404-449-0087
Image Communications	Twincomm 9600 V.32	\$299	\$279	None	201-935-8880	201-935-6548
Intel Corporation	14.4EX V.32bis	\$549	\$269	503-645-6275	503-629-7000	503-228-9707
Intel Corporation	9600EX V.32	\$599	\$299	503-645-6275	503-629-7000	503-228-9707
Lightning Comm.	Lightcom 144F	\$279	\$240	714-457-9429	714-457-8001	714-457-8004
Multi-Tech Systems	MT932BA V.32	\$869	\$435	612-785-9875	612-785-3500	612-785-9874
Multi-Tech Systems	MT1432BA V.32bis	\$899	\$450	612-785-9875	612-785-3500	612-785-9874
Practical Peripherals	PM14400FXSA V.32bis	\$549	\$250	818-706-2467	818-706-0333	818-706-2474
Supra Corporation	SupraFAX V.32bis	\$399	\$249	503-967-2444	503-967-2400	503-967-2401
Supra Corporation	SupraFAX V.32	\$299	\$199	503-967-2444	503-967-2400	503-967-2401
Telebit Corporation	T3000 V.32bis	\$949	\$399	None	408-734-4333	408-734-3333
U.S. Robotics	HST/DS V.32bis	\$1295	\$449	708-982-5092	708-982-5010	None
Ven-Tel	EC96 V.32	\$699	\$439	408-922-0988	408-436-7400	408-436-7451
ZyXEL	U-1496E V.32bis	\$469	\$370	714-693-0762	714-693-0804	714-693-0705

course. Since the modem also features V.42 error correction and V.42bis file compression, we were able to regularly accomplish speeds as high as **1970** characters-per-second (cps) on compressed **.ZIP** files and **1985 cps** on **.GIF** graphics files. This corresponds to an apparent link of **19,850 bps** - good stuff any way you look at it.

To support this, USR has also upgraded their serial port link allowing you to lock your port at **57,600 bps**. With the newer modems, you generally set your software to lock the port speed (the speed of the link between your computer and the modem via the serial cable) at some value higher than the actual connections you expect the modem to make with other modems. This little complication arises from the use of the error correction/compression technologies in V.42 and V.42bis that allow apparent data rates higher than the actual modulation link between the modems. The previous USR Dual Standard models would only allow port speeds of up to 38,400 bps. This new model increases that figure significantly to accommodate these higher speeds.

The HST mode had another advantage that is actually pretty major in some applications. In V.32bis mode, this modem and almost all V.32bis modems can take as long as 20 seconds after the telephone network makes the connection to go through all the hand wringing (actually hand shaking) and negotiating before you actually have a link and can start transferring data. Why is this important? We have systems that dial the Boardwatch BBS daily to pick up text files such as USA Today and Newsbytes. The actual transfer of a 60KB file at V.32bis speeds takes about 30-35 seconds. If you add 20-25 seconds to that in telephone time, you're spending a good part of your time just in negotiation and can conceivably go over the 1 minute mark to the joys of paying for a second minute. The USR HST mode took an amazing 3.5 seconds to negotiate the link instead. The BBS modem answered and it was over. The downside of course is you can only use HST mode with another USR modem.

The model we received did not have a fax capability. But by the end of July, the company was shipping 16.8K Courier Dual Standard models with fax -

allowing you to use this modem for sending/receiving 14.4kbps fax transmissions as well.

Physically, USR's high-end modems have been extremely large as modems go - and unusually shaped - wide, deep, and flat. The new Dual Standard is dramatically smaller, about the same size as the USR Courier 2400 in fact.

The new model features a **VOICE/DATA** switch on the front panel. We were initially underwhelmed by this feature. First, other modems have had it, and secondly, we've never needed it. The theory is that you can call someone voice via a telephone plugged into the second RJ-11 jack on the modem, talk about your upcoming file transfer, and then press the button on the front panel to engage the modem. In practice, we don't know of anyone doing any of that. It's just too awkward to get two people on opposite ends of a telephone line to do everything you have to do just when you need to do it to actually transfer a file this way - even with a switch. It's much easier if one of you has a BBS or a comm program with a host mode that looks like a BBS for a few minutes.

But we have religion now on VOICE/DATA switches. The key is that USR rather cleverly made this switch programmable. You can use it for VOICE/DATA switching if you like, but you can also use it for other things by stuffing a value into an S Register to change its function. For example, by entering the **AT S32=3** command, you change the function of this switch so that any time it is pressed, the modem redials the last number dialed. You can store numbers in the modem and by setting **S32=4** it will dial THAT number. If **S32=6**, then anytime you press the button, the **ATZ** reset function is performed. Most system operators will likely set **S32=8**. This is the busy out telephone line toggle. If you need to take your BBS down for maintenance or even a single line out of a hunt group, you can reach up and press this button to not only take the modem offline, but take the line off-hook (busy). On a hunt group, incoming calls then will just skip over that line. Press the button again and the line is toggled back to the normal state. This is likely to be the way most BBS operators use this button.

A physical nicety we've always liked about USR modems is an actual front panel volume control. There are times when we really do want to listen to precisely what sounds are being made by a modem trying to make a connection. There are other times when the shriek of a modem is not among any of the things we want to hear. And it is still easiest just to reach over and adjust the volume either up or down to nothing with a knob. This latest model replaces the knurled rotary knob of previous models with a slider on the right side of the case. It works about as well and is probably easier to use.

Another feature we're beginning to grok a bit is called Adaptive Speed Leveling (ASL). Normally V.32bis modems connect at 14,400 bps. But if telephone line conditions deteriorate and errors become a problem, they step down to 12,000 bps, 9600 bps, 7200 bps, or lower until they find a speed they can sustain. But this is a one way trip. However low they go, that is the highest speed available for the remainder of the call.

USR's ASL mode follows this convention, but with a twist. If line conditions later improve, the modem can also renegotiate back UP to a higher speed again. In this way, it dynamically adjusts speed to line conditions in BOTH directions over the course of the call.

The documentation that comes with USR modems has been good in the past, and while we miss the little black vinyl notebooks they used to sport for their manuals, the content of the new white ring-bound books remains a mark for the rest of the modem industry to meet.

For out dialing, this modem is power and speed in a black box. For BBS operators, the most impressive thing is reliability. We test a lot of different modems on Boardwatch BBS. Most work more or less but most also "get lost" about once a week. The fix is always simple - reset the modem and it works fine for another week. With the USR modem, you can configure it once, put it up, and walk away knowing it will stay up and running indefinitely.

USR announced last month that they were planning on a new CCITT standard titled V.FAST within about a year and a half that will provide modulation links as high as 28.8kbps. Given the spec bandwidth of our telephone system, this is significantly beyond the boundaries of information theory - I think the academics call this "too wide a hog through too narrow a gate." But we're willing to listen. And they have already announced that this 16.8K Courier Dual Standard model will be upgraded to V.FAST by plugging in a new daughter card - at your site - for \$299.

There is one negative. USR is still extremely proud of this modem. Despite the falling price of modem hardware generally, they've managed to hold the list price of their top of the line at \$1195 for nearly three years. The list price of the 16.8K Courier Dual Standard is \$1195 and \$1295 if you want the fax option. They do offer a generous sysop discount to \$449 plus shipping.

USR has an extremely poor record of upgrade support. And this situation pretty well continues. They have introduced a new program where any sysop can upgrade to the new 16.8K model (casually referred to as V.SMALL be-

cause of the new small footprint) for \$299 if you already have any Dual Standard or \$349 to move up from an HST or V.32bis model. With new models now at a price of \$449 under the sysop program, they're basically giving you \$150 for your old modem - such a deal. And, you must send in the old modem to the factory. Once they receive it, they'll send out a new replacement. Given the historical turnaround times at USR, this doesn't sound practical for a bulletin board to be "without" a modem for weeks on end. USR has historically told sysops they would be better off to just "sell the old one." It appears this is still true.

The sysop program has fallen into some disfavor recently due to the requirement for COD cash delivery and delivery times that sometimes run as long as three months. According to Adam Strack, the new head of the U.S. Robotics Sysop Program, they are working to improve this. Their goal is to accept credit card orders and deliver product within three weeks. They also intend to become more active in the HST FidoNet Echomail conference. BBS operators can order modems under the program by calling the USR support BBS at (708)982-5092. U.S. Robotics, Inc., 8100 North McCormick Blvd., Skokie, IL 60076; (708)982-5010 voice; (708)982-5092 BBS.

ONLINE GRAPHICS - THE NEXT FRONTIER

The entire online industry has been almost exclusively focused on the rubric of affordable speed - the move to 9600 bps and greater connections has occupied most of the last five years and has been the big egg to crack. In 1987, 9600 bps modems cost a thousand dollars (the cheap ones) and could only talk to themselves at that speed. Before the end of this year, a mass move to 9600 bps and faster modems will happen as these modems fall in price to less than \$200 and perhaps as low as \$100. There will still be speed issues as we move to 14,400, and 19,200, and higher, but the big jump always was from 2400 bps to 9600 bps. Everything over that is nice, but not nearly so significant.



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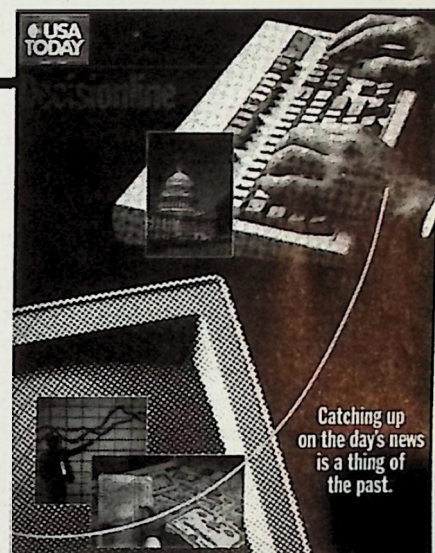
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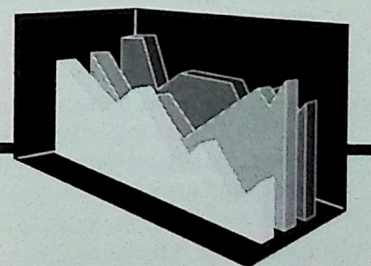


BOARDWATCH Online Edition

While the online information services industry is broadening daily, the number one topic of interest to most callers is still how to put their modem into play for maximum benefit. And since March 1987, Boardwatch Magazine has been the best way to do it. Now, we've introduced an Online Edition specifically for display on your information service. Boardwatch lists product support systems, free government database services, and selected bulletin boards of note from all over the world. Boardwatch places the same information you now hold in your hands - the best information the online world has to offer each month - up on your caller's screen. Get the definitive publication for the online world for your system. Boardwatch is available at a quarterly rate of \$75 or an annual rate of \$250.

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The reason this has had everyone so preoccupied is that virtually EVERYTHING else anyone wants to do online has been held up by this speed problem. With most of the population at 2400 bps, every design consideration had to be balanced against how long it would take to get there. Anything beyond the very basic ASCII text could bring the channel to a crawl. File transfers took forever and the more graphic interfaces were simply out of the question. It is true that Prodigy DID introduce a graphic interface at 2400 bps, but has widely been viewed as technically crippled by the speed problem. As they move to 9600 bps, this should improve dramatically.

And the next technical challenge is indeed graphics. Everywhere we turn we hear system operators, developers, and industry pundits clamoring for the next graphical online interface. It seems to be the issue of the season.

This new frontier has its own problems - most of them having to do with standards. All serious efforts at prettying up the online interface have involved software at both ends. The host software talks to the terminal software and they decide between them what to put up on your screen.

The problem with this approach is the proprietary and usually crippled nature of the terminal programs. In most cases, the terminal program will ONLY work with a matching host. Worse, developing terminal software is NOT a trivial task. Procomm, Telix, and Qmodem, the three most popular terminal programs in BBSland, developed over the course of years with dozens of releases, input from users, added features, etc. They got there the hard way. Now, it seems everyone dabbling in graphics is issuing the terminal program of the week. The results are graphic, proprietary, and aside from displaying the glitzy colors, usually execrable at everything else - like transferring files, capturing screens, etc. Few online are willing to give up their favorite terminal program and the wealth of thousands of online services to pledge allegiance to a single online service - no matter how pretty and easy to use.



NAPLPS Graphic Example. This file 6470 bytes

But the desire for graphics is pretty substantial. Brian and Patricia Dear of Coconut Computing in La Jolla California have found a market for their Unix BBS package COCONET based largely on the stunning graphics the system offers. It does require the use of a proprietary terminal program that comes with the package. It is easy to use and is probably actually more attractive than Prodigy's NAPLPS implementation.

Over the course of the summer, it seems everywhere BBS operators and callers are clamoring for some new breakthrough on this front. The word from all quarters is that it is time.

Last month, EXEC-PC, arguably the largest BBS in the United States, announced support for a graphics technology from DynaTek Industries Inc. of Longwood Florida. This protocol is called Extended Terminal Graphics and Capabilities or ETGC. Described by Brett Floren as an EGA/VGA online interface, the protocol requires use of Dynatek's proprietary UniTerm terminal program. Although the company has announced a discount on the program for EXEC-PC subscribers, they have been extraordinarily cagey so far

on just what the price IS. EXEC-PC subscribers will still be able to use the existing interface, but can opt for the ETGC graphic interface if they prefer. EXEC-PC is available at (414)789-4210. For more information on UltiTerm and ETGC, contact DynaTek Industries, Inc., 1275 Bennett Drive, Suite 138, Longwood, FL 32750; (407)260-6900 voice; (407)260-2752 fax; (407)260-2913 BBS.

Prodigy may have led the way on this one actually. In 1983, a graphics standard was adopted by the American National Standards Institute (ANSI) titled the North American Presentation Level Protocol Syntax (NAPLPS - pronounced NAP-LIPS). This standard is public domain and published as ANSI-X3.110-1983 by ANSI and as CSA-T500-1983 by the Canadian Standards Association. NAPLPS was designed for the encoding of alpha-numeric, alpha-mosaic, alpha-geometric and alpha-photographic constructs. This syntax is based on the international standards ISO-2022 and ISO-2375. NAPLPS is a resolution independent and device independent syntax and it is extensible to accommodate international character sets. It can include bit-mapped images

as well such as photographic scans - in color. And it even supports animation and sound.

What all this means is that there has been a published graphics standard available for nearly a decade that can allow any computer to talk to any other computer to draw graphics on the screen. The standard is really a type of screen description language featuring commands that tell the terminal, for example, to draw a circle of diameter X at location Y and color Z. It is up to the terminal program to actually do the machine specific graphics work to do the drawing.

So why isn't NAPLPS just about everywhere? Well, no one really ever implemented it. It does involve transmitting more data than ASCII or ANSI and so it was thought of as slow. Many standards are adopted more or less after the fact - after someone establishes a technology in the market place with product. NAPLPS was almost entirely contrived and published without any widespread use.

Prodigy, with their proprietary terminal program, is actually a customized version of NAPLPS. A few television cable operators also use NAPLPS to display news and other data during the vertical retrace signal of transmitted TV signals. A few creative people used the NAPLPS standard for mall kiosks. But other than these few applications, it has never gotten far off the ground. Through most of its history, it has been a paper standard.

While much of the online world has been simply unaware of the existence of NAPLPS, the rest has been stymied by a lack of inexpensive and capable tools. None of the popular terminal programs offer NAPLPS terminal emulation, there are few NAPLPS frame drawing programs and those available tend to be pricey. And aside from Prodigy, which has no apparent interest in establishing anything beyond a captive audience, no significant online services used the standard.

Dave Hughes, of Old Colorado City Communications, has been promoting NAPLPS as a standard almost from the day it was issued. For years he was a voice in the wilderness, but in 1991 he

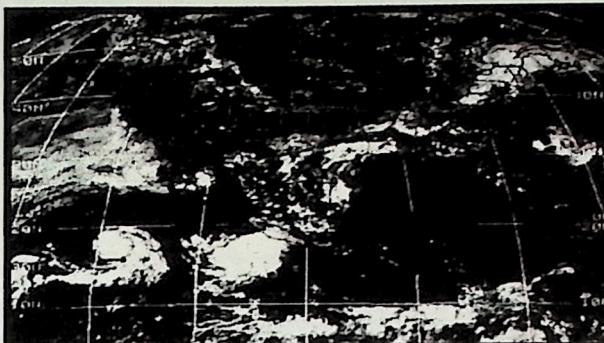
persuaded Microstar Graphics, a Canadian software company, to release their Microstar Graphics Editor and a rude NAPLPS terminal program titled PP3 as inexpensive shareware programs. He gave a presentation on this new development at FIDOCON91 here in Denver, and it seems to have had some effect. Dave is currently employing several Russian programmers at developing further tools.

MicroStar makes an editor titled MGE - MicroStar Graphics Editor. Hughes has preached the gospel of BBS/cottage online services to Peter Jordan, president of MicroStar. Apparently, his vision caught because in August of 1991, Jordan agreed to release their \$1000.00 MGE program as a \$50 shareware release. He also agreed to release their Personality Plus NAPLPS terminal program at \$25 - filename PP3PAC.EXE. Essentially, this gives the online community two shareware tools to make a start at NAPLPS. Additionally, the company sells a \$1000 MVDI-T developers toolkit that allows anyone to incorporate NAPLPS capability in their C language program with as little as 9 lines of code. They do want royalties on the resulting product but the royalty

schedule is actually pretty modest. Microstar Software Ltd., 100-34 Colonnade Road North, Nepean, Ontario Canada K2E-7J6; (613)727-5696 voice; (613)727-5272 BBS.

The MicroStar Graphics Environment, which shows up on any shareware package we've seen so far that implements NAPLPS, has a rather serious problem in it. Some sequences of NAPLPS characters can actually cause the comm program to perform a warm reboot on your PC. We've tried this with several different machines and it does happen. This little flaw does not augur well for NAPLPS.

But NAPLPS is picking up adherents. Ed Pimentel operates the **International Home Base Computing BBS** in Atlanta Georgia at (404)498-4254. IHBC BBS is focused on telecomputing, multimedia applications, and of late - NAPLPS. Ed has converted his system to **TurBoard** - a new BBS software package specifically designed for NAPLPS graphics by Shawn Rhoads of Software@Work. Ed is also maintaining a list of BBS offering NAPLPS graphics. At this point, the list is a bit meager with some 11 systems listed.



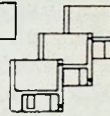
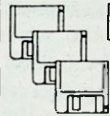
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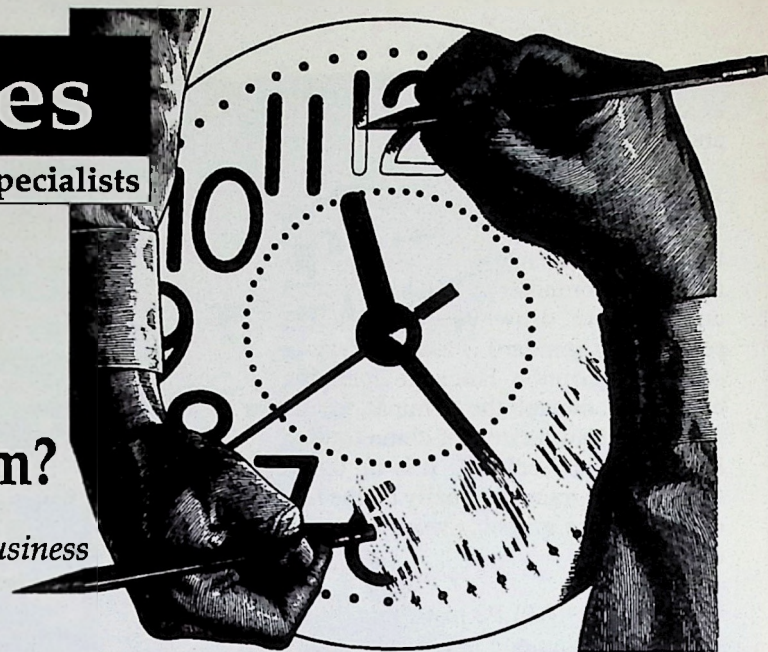


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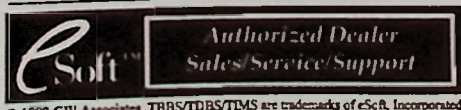
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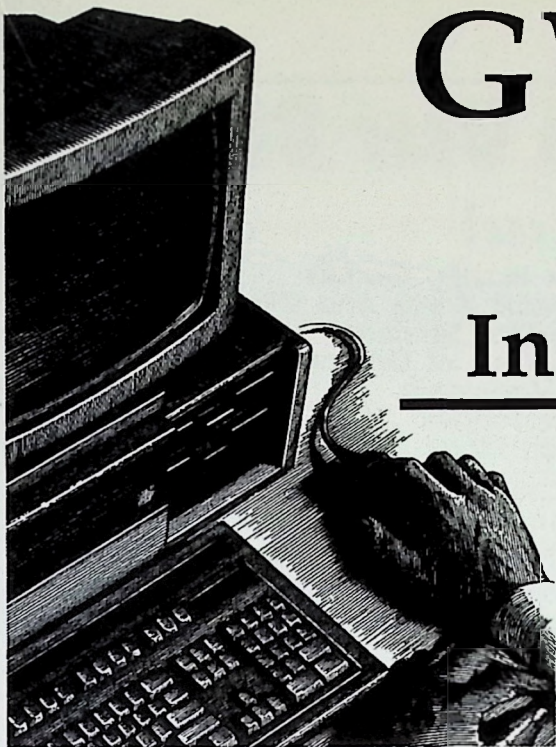
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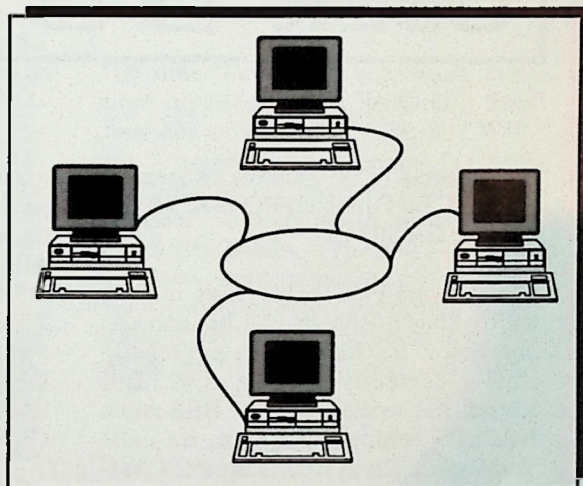
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But it seems to be growing as interest picks up. Ed Pimentel, PO Box 95901, Atlanta, GA 30347.

The software Pimentel is using is written by Shawn Rhoads of Chattanooga, Tennessee. It's barely in a pre-release state - currently version 0.42. But Rhoads has written both the BBS and a NAPLPS terminal program he calls TurModem. His system is the **PC Chattanooga BBS 1:362:614 at (615)756-7810**. TurBoard is available for download there in the file **TB042.ZIP** and the TurModem terminal program is in **TM042A.ZIP**.

TurBoard is still pretty basic BBS software, but does show some promise. It works with FidoNet, and offers .QWK mail. It has three graphics modes - ASCII, ANSI, and NAPLPS. You can dial in with any terminal program, and the NAPLPS is generic - it works with any of the available NAPLPS terminal programs. The program features a modest \$35 registration fee. His own TurModem displays NAPLPS graphics, but at this point it too is a pretty basic terminal program. Most of the usually

expected basics of a terminal program are missing - but it is an improvement on some of the earlier NAPLPS terminal programs. It uses Chuck Forsberg's DSZ program, for example, to do ZMODEM downloads. You can easily switch between ANSI and NAPLPS modes with a keystroke. Shawn Rhoads, Software@Work, PO Box 283, Chattanooga, TN 37405.

The most exciting work is being done by Alan McNamee of Reno, Nevada. McNamee put up a TBBS system just this past January - but did so in a rather big way. The system is titled **ADVANCED SYSTEMS** after his satellite communications research company, and sports 16 incoming telephone lines, a 16 port DigiBoard serial card, over 4 GB of file space, and runs on a 50 MHz '486 machine with 20 MB of RAM. The system operates at (702)334-3320.

McNamee has caught the TBBS/TDBS bug pretty hard. He's issued a half dozen TDBS application programs to perform various utility functions. He ran into a bit of a problem with one program he did titled **SYSMON**. SYS-

MON allows the BBS operator to dial in from any remote location and actually see an accurate simulation of the system console - to observe caller activity on each line. It can also be used to allow callers to watch the line activity. One of the early releases of this program featured a little extra wherein anytime he logged into a system running it, it modified his user log entry to give him system operator status. Software that does this is usually referred to as having a "back door" and it is the number one sin a software developer can commit in the BBS world. The TBBS community roughed him up pretty badly on it and according to McNamee, it was a debugging feature that he should have removed before letting any copies out. He claims he quickly removed it from circulation, deleted the offending code, and re-released it without the feature.

In any event, he stumbled across NAPLPS just a few weeks ago and fell for it completely. On August 2nd, he released both a terminal program and a program he calls the **System Control and Transmission System (SCTS)** that comes bundled with the Microstar

Graphics Editor. The entire package is priced at \$199 and gives TBBS operators the ability to offer NAPLPS as an option.

There are several things to recommend the Advanced Systems NAPLPS package. The problem with offering NAPLPS on existing bulletin boards is that any number of system features just won't make sense in NAPLPS. The design of TBBS's existing full-screen message editor, for example, just wouldn't make sense in a larger type font - it would word wrap differently on the screen. NAPLPS terminal programs seem to have the curious ability to overwrite existing screen text - retaining the original text as well. This can produce extraordinarily confusing displays. Similarly, the TBBS file list wouldn't work - the larger NAPLPS font couldn't display the same number of files on a single screen.

McNamee has engineered a pretty functional solution. His system switches back and forth between ANSI graphics and NAPLPS graphics with somewhat reckless abandon. But he's done it in such a way that the caller doesn't need to do any of the switching. When a menu is done in NAPLPS, the terminal program switches automatically to display it. If you click on a menu option with your mouse that leads to a file area or a specific TBBS system prompt, message editor, etc., the program switches back to ANSI graphics to perform that function. When you return to the menu, it again appears in NAPLPS. This switching back and forth is not at all disruptive and it makes the system look quite natural - and very graphic.

Part of the NAPLPS magic is NOT just graphics - it involves motion. It is very easy to animate NAPLPS frames where lines twirl, swoop, windows within the screen zoom in at you, figures walk across the screen, spaceships fly, etc. Best of all, these files are often SMALLER than similar ANSI screens.

The terminal program, which TBBS operators can freely distribute at no charge or license fee, is actually not bad. It includes a basic set of file transfer protocols including X-MODEM, 1K-XMODEM, YMODEM, and YMODEM-G. It does not include

ZMODEM at this time, but it does feature a dialing directory, the communications parameters can be modified quite flexibly, and of course, it decodes NAPLPS graphics. The terminal program is available in the file NAP.ZIP from the Advanced Systems BBS.

McNamee has his system converted to NAPLPS of course with most of the menus available in NAPLPS and a sample screen loaded with about 15 NAPLPS frames. The graphics are stunning, the mouse works, and it is visually impressive. There still aren't many NAPLPS graphics frames floating around. The Advanced Systems package comes with a copy of the Microstar Graphics Editor - a program we've not found to be too friendly to aspiring artists. But rumor has it there is a conversion program floating around that converts Corel Draw files to the NAPLPS format. This utility by itself would bring a whole world of graphics online.

As of August 2nd, the release date for the Advanced Systems NAPLPS package, McNamee claimed he had already heard from nearly a hundred TBBS system operators who were clamoring for the package. Alan McNamee, Advanced Systems Research, Inc., 1475 Terminal Way, Bldg. C2, Reno, NV 89502; (702)334-3304 voice; (702)334-3320 BBS.

Whether NAPLPS, COCONET, or some other graphics convention comes into common use, the urge to communicate more graphically seems to be upon us. With the higher speeds now available with reasonably priced modems, the concept is approaching the plausible.

SOFTWARE NOTES

FAXABILITY PLUS

by Thom Foulks

This is a Runtime Review of FAXability Plus 1.0, from Intel Corporation's Personal Computer Enhancement Division.

Intel has trademarked the WYPIWYF (What You Print Is What You Fax) acronym, but this is the first Intel software product to translate that concept into full Windows usage. Intel is clearly taking aim at Delrina Technology's WinFax Pro -- the current market leader for Windows/user -- and FAXability Plus almost hits the bullseye. With a couple of niggling exceptions, the product may well become foremost in the "hearts and minds" of reviewers and users.

Let's cut to the chase, and take up the exceptions first. Omitted from FAXability Plus is any form of phonebook importation feature. Users of Hotline (Smith Micro) or YourWay (Prisma) or some other phone-database handler need be forewarned -- allow ample data input time for transferring your fax number file. (There is a freeware work around for this, PBOOK.EXE, available on the Intel BBS; but its written for dBASE programmers, not supported by Intel, and only veteran faxcard users are likely to find it.)

The other exception, admittedly even more niggling, is that FAXability Plus does not save its data files. So? Well, this longtime computerized fax user sends many 1-2 page memos, highly transient, seldom worth saving more than a few weeks. Typically -- using a Windows word processor and WinFax Pro -- I write a memo and print it to my fax card. No source document is saved, saving me the file-management deci-



AQUILA BBS

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Aquila has filled the computer screens of Chicagoland for over three years, growing from a single modem line system in 1988 to over 25 lines in 1992. Aquila's success over the years is due to the enthusiastic support of our users. New callers are encouraged to download our current file list and electronic mail conference listing. A short guided tour highlighting our system services is also available for new users. All of our information is automatically mailed to you to read in the comfort of your home or office. So pick up your modem and give us a call! You will find Aquila BBS to be the most valuable bulletin board in your dialer.

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Give your modem a workout! We add new shareware and public domain programs everyday. Over 400 programs are added weekly. With more than 5 Gigabytes of on-line storage, we stock over 50 thousand programs. Aquila makes it easy to find the programs that are important to you, by organizing them into 120+ file directory categories everyday.

We cater to the Windows User

With Windows becoming the most popular user interface around, we make an extra effort to keep you supplied with the latest programs and enhancements by devoting a special conference area just for Windows containing 2000+ files organized into 40+ file directory categories.

Our organization and the latest programs make our file areas the most popular around. These are just a few of our most popular categories available:

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System Enhancements
File Organizers
Word Processing

Computer Games
Music and Midi Sound Files
Computer Animations
CAD Drawing Utilities

Business - Finance - Tax
Novell and Lan Utilities
Database
Programming

Icons - Icon Managers
Wallpaper - BMP's
Multi-Media Related
Fonts - Font Utilities



The AQUILA BBS Team (Left to right: Kevin & Kristy Behrens, Steve Williams, Chris Babb)

New User Information

All first time callers receive by mail, our printed 'New User Information' and 'E-Mail Conference Directory' guide, as well as a 'Quick Command Guide' to help you get the most out of Aquila. The new user information covers system services such as answers to commonly asked questions, USA Today, Boardwatch Magazine, and Electronic Mail off-line readers. The 'Quick Command Guide' is a desktop lookup for using Aquila commands.

AQUILA BBS
708-820-8344

New User Information

Aquila Starter Kit

Callers that are new to modem communications will find 'The Aquila Starter Kit' a great time-saver. Easy for the beginner and helpful for the expert! This \$39.95 kit includes the following:

Procomm (communications program)
Full documentation for all BBS commands
Off-line file browsing program

Our complete file listing on floppy disk
Off-Line E-Mail Reader
Three month basic membership

Around The World E-MAIL

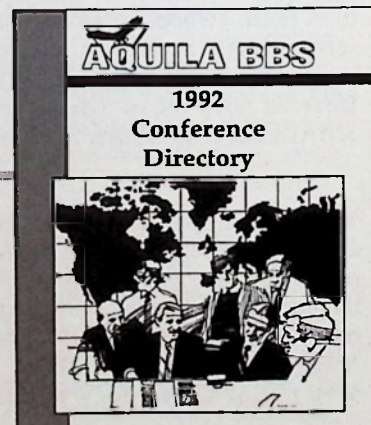
Over 450 Conference Topics

We currently echo to and from ILink, RIME, Fido-Net and Throbneth with more to come in the near future. You can get virtually any question answered here and join in on lively discussions with people from across the country and around the world. We also publish our own 'E-Mail Directory' that is sent to all users of Aquila BBS. This directory lists all of our conferences by category and gives a brief description of the topic of each one. Here is a small sampling of over 450 interesting topics that we offer:

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sion-making of thinking up a lot of distinctive names for memos I may never need to see again; but at the same time providing me name/date reference to all my outgoing fax traffic via the fax data files themselves. Yes, the fax image file is slightly larger; but the automatic reference convenience far outweighs storage considerations.

OK, that's off my chest. Having stated the exceptions, I will also now note that I have converted MY fax usage -- on my two big work machines -- to FAXability Plus. Sorry, Delrina.

In operation, FAXability Plus provides an intelligently-designed Windows menu, with an optional seven-item button bar across the top and four mode-choosing icons across the bottom. The button bar is intuitive, providing only the choices appropriate for a given mode (others are grayed out). The modes include "Faxmodem Status", "Inbox", "Outbox" and "Phonebook".

Clicking inbox or outbox shows you a log of in-and-out activity, with the latest log entry at the top of the file. With the phonebook option, you can add or edit phonebook entries (but there is NO file import capability!), as well as create and edit recipient groups for "fax broadcasting". Multiple phonebooks are supported, but they must conform to CAS format.

In the "Send Fax" mode, FAXability Plus's input screen emulates a fax cover page, with a logo (your choice of .PCX files) at the top, a space for a plain text note, and an open phone book ready for mouse-click choice of recipient(s) -- yes, a "onetime only" group can be built on-the-fly. Faxes can be scheduled for time and date of transmission, and Windows need not be running (but the fax drivers must be loaded) for the schedule to be followed.

Viewing received faxes may well be this product's most handsome function. Fax images can be zoomed in-and-out from a button bar; areas of an image may be copied to the Windows clipboard (but not directly to file!) and a multi-page fax can be viewed as a scrollable image. Image file load-and-display time is perceptibly faster than typical .PCX editors, such as Windows

Paintbrush. Upside-down faxes, a common computer fax problem, can be rapidly flipped.

In short, with a Windows interface implementation which could be a model for other developers, FAXability Plus combines flexible functionality with superb output. It is truly, a classy product! And, at a recommended price of \$129 that is likely to be closer to just over \$70 on-the-street, it is an outstanding value.

At a slim 66 pages, the manual is well-indexed and well-written. But, as with many newer Windows products, the context-sensitive online help is in greater depth, instantly available, and relegates the printed manual to a distant shelf.

FAXability Plus was delayed from its targeted May shipping date, and in late July was just beginning to make its appearance in standard software distribution channels. Ordering information may be obtained by phone (numbers below). Intel provides support by virtually all means, from voice (non-tollfree) to fax to BBS to CompuServe and MCI Mail.

It runs on any Windows 3.x-adequate computer. It requires 2MB RAM, 6MB hard disk for operations (additional 6MB free), DOS 3.3 or higher, with graphics adapter card; and a Class 1, Class 2, Sendfax or CAS-compatible fax device (card or external).

As noted, I've converted. But stand by for further word -- an upgrade of Delrina's WinFax Pro is expected before year's end. From: Intel Corporation, 2200 Mission College Blvd., P.O. Box 58119, Santa Clara, CA 95052-8119. Tel: 800-538-3373 or 503-629-7354.

[Thom Foulks is host of Computing Success, a syndicated radio talk show covering computer technology issues from the Business Radio Network in Colorado Springs, Colorado. The show airs Saturday at 6:00 AM MDST and Sunday at 2:00 PM MDST on affiliated radio stations nationwide. Foulks also wrote his own Message Hub BBS software package and operates the Cache la Byte Hub BBS at (719)528-8545. - Ed]

MACINTOSH BBS NEWS

by Bill Gram-Reefer

FROM PC TO MAC AND BACK - MAYBE

Unless it's all a big joke, it appears the purpose of most BBSing is to exchange information. Unfortunately, sending files to and fro between UNIX, Mac, DOS and other platforms, and being able to actually unpack the files and use them has never been what one could call easy. In this regard, the high-density **SuperDrive** is one of the most unheralded peripherals Apple has ever foisted on its unsuspecting customers. One of the snazzy things the SuperDrive does, in tandem with the **Apple File Exchange** utility program, is read DOS disks. This provides users with the ability to transfer files to and from Macs and PCs. With its new **Macintosh PC Exchange (PCX)**, Apple has taken the messy little business of connectivity one step further on the ease-of-use scale. Now, with PCX, users can use their SuperDrive-equipped Macintosh running System 7 to actually transfer, OPEN, and work on files created by DOS programs.

PCX is a **CDEV** utility that, once placed in the **Control Panels** folder of any participating Macintosh, lets you exchange documents between Macintosh, and DOS- or Windows-based computers that use DOS-formatted high-density disks. You can also create and use DOS-compatible diskettes with PCX. Using the PCX control panel, you can assign Macintosh applications to read comparable DOS files. For instance, a user can specify that any DOS file whose filename ends with the suffix **.XLS** will be opened by the resident Macintosh version of **Microsoft's Excel**. Conversely, you can create files with **Clariss' MacWrite** and transfer them to a pre-formatted DOS disk as a **.DOC** Word file.

ONCE IN A GREAT WHILE THERE COMES BBS SOFTWARE THAT REALLY MAKES WAVES. GET OUT YOUR SURFBOARD.

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While multinode and multiuser BBSs are all the rage, Synchronet takes these technologies one step further with DESQview Enhanced Mode operation providing up to 20 times improved performance over other BBSs under multitaskers. Combined with Synchronet's already highly advanced interrupt driven output design, up to ten 9600bps or 14.4kbps connections on one PC are finally possible (don't try this with any ordinary multiuser BBS.) Network several DESQview PC's together for the ultimate full throughput high-speed multinode BBS. Unparalleled speed, advanced multiuser capabilities, and industry standard external Door/Protocol flexibility shoot Synchronet to the top of the Multinode BBS arena.

CD-ROM Direct Support

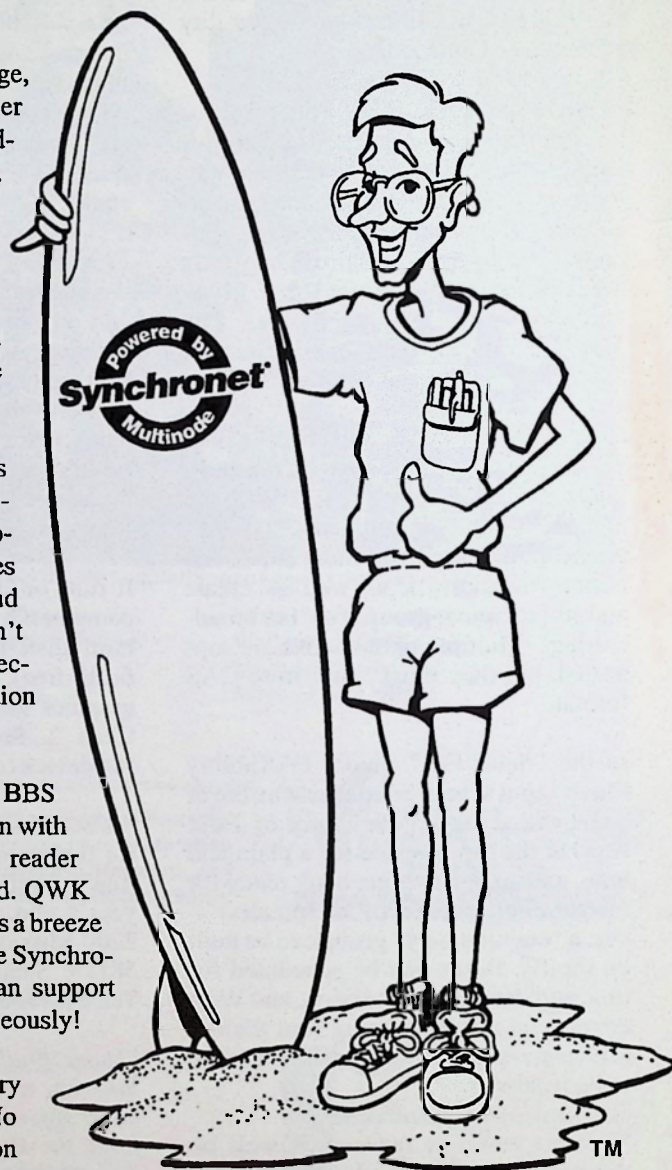
CD-ROMs are the fastest growing addition to today's BBS, yet multiuser access to CD-ROMs and Jukeboxes can create severe bottlenecks virtually crippling throughput and usability. Synchronet's built in CD-ROM support makes multiuser contention problems a thing of the past by automatically and transparently buffering CD-ROM requests to hard disk. But Synchronet doesn't stop there. With even more innovative enhancements, such as Alternate Directory Paths and Read Only Intelligence, CD-ROMs become the perfect addition to any Synchronet BBS.

Internal QWK Mail & Networking

Echomail networking has virtually exploded across the BBS industry and Synchronet brings you right into the action with internal QWK packet networking and offline mail reader support. Again, no external module or door is required. QWK packet support is built in! And setting up your network is a breeze with Synchronet's complete easy to use menu driven configuration. Of course Synchronet also supports Fidonet packet networks as well. In fact Synchronet can support multiple Echo Networks on different network packet technologies simultaneously!



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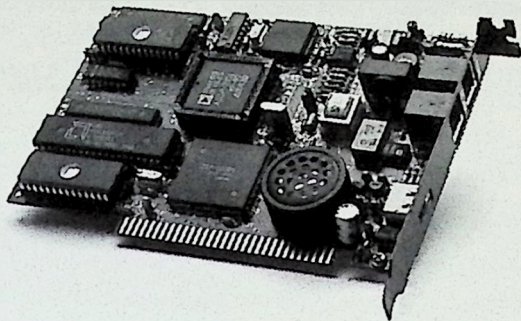
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It saves time. Without a utility like PCX, a user could create a document in MacWrite; save it as a text or Microsoft Word for PC file; open Apple File Exchange and insert or create a DOS disk and transfer the file. With PCX, all you do is insert the disk and double-click on the file you want to work on and you're off. One obvious BBS application for PCX includes having the capability to instantly translate downloads or new uploads to a readable format for subscribers. BBS subscribers will cheer those same benefits.

PCX should have been bundled with the System 7 Tune Up but wasn't - all part of Apple's new scheme to unbundle system upgrades and enhancements from one-size-fits-all into a more market-driven, cafeteria approach. Peddling a stand-alone application like QuickTime makes sense, but the level of connectivity provided by PCX edges on b-a-s-i-c and should have been included long ago and with future versions of system software from Apple.

About \$69 and no dumb looks from the Biz-Mart salesperson if you buy through the mail-order channel.

As wonderful as all this sounds, PCX is but a johnny-come-lately to Dayna's DOS Mounter which has been around for years, the current version (3.0) has been shipping since January '92. Just like PCX, DOS Mounter provides finder-level support for DOS disks on a Macintosh SuperDrive. DOS disks appear on the desktop and look and behave like any Mac disk, in that directories appear as folders and files appear as documents. DOS file extensions can also be "mapped" to Macintosh applications; you can even use a "wildcard" to map several DOS file extensions to one application. System 7 compatible, DOS Mounter installs as a CDEV into the Control Panel and includes Balloon Help.

So far, DOS Mounter matches up fairly with Apple's PCX, but there's more. For those of you who have managed to escape capture and avoid conversion into System-7 pods, there's good news

- DOS Mounter not only supports System 7, it even works on those old and slow 6.02+ systems. You can disable the Control Panel without restarting, and, under MultiFinder, you can mount an unlimited number of DOS volumes or partitions. Ironically - or should we say typically - DOS Mounter even out does Apple in supporting Apple's own 5.25-inch PC floppy drive.

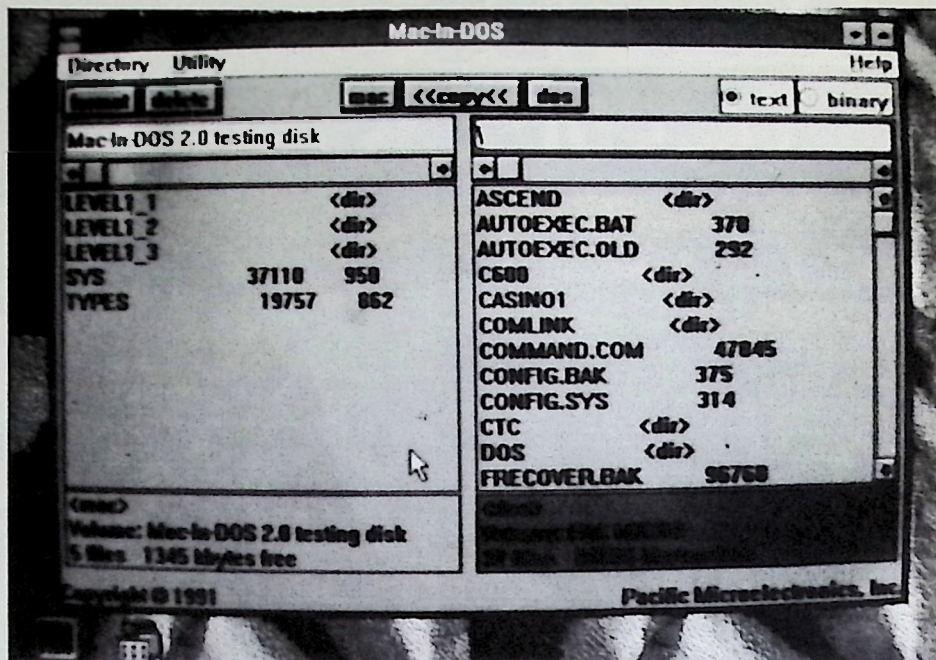
With a manufacturer's suggested retail price of \$89.95, you can also find DOS Mounter frequently bundled with DataViz' MacLinkPlus translators, a large collection (100+) of PC-to-Mac file-conversion utilities-get these, too! Dayna Communications, Inc., 50 South Main Street 5th Floor, Salt Lake, UT 84144-0402; (801) 531-0600 voice. DataViz, Corporate Drive, Turnbull, CT 06611; (203) 268-0030 voice, (203) 268-4345 fax.

Yet another similar method for transferring files between Macs and PC floppy disks is AccessPC from Insignia Solutions, Inc. Compatible with Systems 6.XX and 7, it too provides for mount-

ing DOS-formatted disks onto Macs and opening applications based on PC file extensions. In combination with Insignia's flagship product, SoftPC, AccessPC is an ideal way to mount an IBM-formatted hard disk to your Mac—even cartridge and magneto-optical drives. In that scenario you could transfer files back and forth, or maintain a dedicated area on a Mac-hosted BBS for DOS files, programs and utilities — imagine that.

SoftPC, which comes in XT or AT varieties, provides robust, fast, and ultra-compatible software emulation of DOS. SoftPC can run in the background under MultiFinder or System 7; with a SuperDrive you can even boot from it. SoftPC AT works with 68020 and up Macintoshes and needs 4-Mb of RAM, easy. The Universal version of SoftPC will work on lesser Macs with 2-Mb RAM, minimum. If you have a lot of PC subscribers calling your Mac-hosted BBS, SoftPC is an ideal tool that lets you mount IBM CDs from Night Owl, Mid-America Digital, Digital Publishing and others. With SoftPC, which includes Microsoft's CD-ROM extensions, CD-ROM drives in High Sierra or ISO 9660 format containing PC data can be read in most Mac CD-ROM drives. The payoff is your PC subscribers should be able to browse the titles and descriptions using the CD's own search or database software. Now you can turn those blank stares into smiles when a PC caller asks you if there are any DOS shells on **BBS in a Box**. Additional versions of SoftPC for SPARC and NeXT machines are also available. Insignia Solutions, 526 Clyde Avenue, Mountain View, CA 94043; (800)848-7677 voice; Night Owl Software, 219 Potomac Avenue, Buffalo, NY 14213; (716)886-2726 voice; Mid-America Digital, 1501 SE 66th Street, Oklahoma City, OK 73149; (405)677-6136 voice, (405)386-4599 BBS; Digital Publishing Company, 8100 Wayzata Blvd., Golden Valley, MN 55426; (612)595-0801 voice.

Conversely, if you run a BBS or a **sneakernet** on the DOS side, or have friends that do, there is a software program from Peripheral Land, Inc. (PLI), that is similar to PCX. **MAC TO DOS TRANSFER (M2DOS)** is a file translation utility for IBM and compatible PCs that lets DOS users read or



write and copy Macintosh files to/from Mac-formatted, 3.5-inch, 1.44-MB diskettes onto PCs. M2DOS works with a wide variety of vendor-independent PC drives including 1.44 MB floppy, floptical, optical, Bernoulli, or any of PLI's drives. M2DOS can transfer most of the commonly used file formats including ASCII, .TXT, .DOC, .EPS, .TIF, .CHT, .WKS, .XLS and SYLK. Requires DOS 3.0 or higher. Peripheral Land Inc., 47421 Bayside Parkway, Fremont, CA 94538; (800)288-8754 voice; (510)651-5948 BBS.

Pacific Microelectronics also provides for simple file conversion using Mac to PC-disk transfers. Its **Mac-In-DOS V. 1.2** enables PC users to access Macintosh files. The most recent version, (V. 2.0) even provides support for transfers to **Windows-based** computers. Running Windows 3.0 or higher, Mac-In-DOS requires a high-density 3.5-inch disk drive and at least 640 Kb RAM on any IBM or compatible PC. The main Mac-In-DOS screen sports a multiple file-directory format that lets you transfer files back and forth from the Mac or DOS sides of the table. It also can read and write to Macintosh diskettes in either **Binary** or **Text** mode when transferring files from programs that share the same basic data formats including **Microsoft Word** and **Excel**, **PageMaker**, and **WordPerfect**. It provides function keys to handle most of the usual DOS chores such as changing subdirectories, and deleting or copying

files. New upgrade features include the ability to name files during the transfer, and the ability to set some defaults including confirmation of file deletion or copying over files with the same name. A pricey \$249 MSRP.

Pacific Micro also produces **Common-Link**, a Mac/DOS-to-UNIX file transfer utility. Common-Link runs on Hewlett-Packard, IBM, NeXT, SCO, and Sun workstations. Pacific Microelectronics, 201 San Antonio Circle, Suite C250, Mountain View, CA 94040; (415)948-6200 (voice); (415)948-6296 (fax).

HOST SOFTWARE WITH AN ATTITUDE

Like a Molotov cocktail, another revolutionary Macintosh host software program avec **graphical user interface** (GUI) and **built-in networking** (BIN), has been heaved from a passing bus into the Mac BBS arena. **MILO** has exploded onto the scene promising to break the chains of struggling BBSers, sysops, and programmers who are shackled by the "my-way or no-way" **ancien regime** of hermetically-sealed Macintosh BBS software. **MILO** rails against the dictators whose opium insists that a Macintosh-based BBS running a TTY interface (however ANSI-fied) with **Tabby** is haute technique, fun to administrate, and remains a viable

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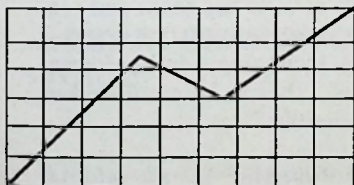
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product with a future - it's election year folks, take your pick. The radical MILO line also declares that Macintosh BBSing should be (almost) free, in rebellion against other pricier-systems that require **MO-money** everytime a sysop wants to add a user after reaching certain volumes. The chants and banners boldly proclaim: **"WE WANT UNLIMITED USERS AND WE WANT 'EM NOW - FOR AROUND \$100!"**

This Maoist-like action is proudly brought to you by **Greg Oberfield** and **Colen Garoutte-Carson** a couple of sysop hacks known for their many **Hermes**-based externals and utilities including a **Trade Wars** knockoff, **Chat Room**, and other miscellaneous titles. Their literature, which recently appeared on the **Big Board** (CIS) promises a new era in Mac-based host/remote telecommunications (BBS) for users, sysops and programmers. Here are some of the planks in the platform:

OPEN SYSTEM - No longer will sysops be alienated from the tools of production. All of MILO's source code will be available to every registered sysop and qualified external-program developer. There'll be so many hooks, you'll think it's a vaudeville show. The super-fast ANSI screens supports updates and backdates that preserve colors. A full GUI option is available for Mac with others to follow for other platforms.

ROOM FOR ALL - Multiuser functionality starts with **128 nodes** with broadcast to all nodes, plus the ability to lock-out nodes and perform system editing. Support for **AppleTalk**, **Ethernet** and **LocalTalk** networks are included. In fact, the authors claim to be working on a way to let sysops network several Macs together to operate all of those possible lines without a serial-port meltdown. Priority projects for MILO include a **Fidonet** built-in mailer, **Internet** mailer, and an offline **AOL**-like "flashmail" reader on the remote user side. MILO will support **32,767** messages in an indexed file area, and allow for the "crunching" of files to reduce size. The text-based version will provide a full-screen text editor. File transfer will support the usual suspects in

addition to **batch transfer** and the ability to **link files** to messages for easy downloads.

A NEW INTELLIGENTSIA! - The authors believe that because the source code will be available to the masses of sysops and that MILO is based on **THINK Pascal V. 4.0.1** rather than "those crazy 'C' programs," they make possible whole new utopian worlds that each and every programmer may create and customize. Since everyone knows that programming is the pinnacle of practical reasoning (praktische Vernunft), we can now better understand the nineteenth-century, post-Kantian Fichte - who in his search for the locus of moral self-actualization, the foundation for every modern revolution, once emoted - "Das Ich setzt sich selbst und das Nicht-Ich" (loosely translated: "The programmer creates himself and everything else!"). As the authors assert, "We wanted to be able to offer the sysop the ability to do what they want, when they want, to their BBS without having to beg and plead with programmers who just wouldn't listen, or instead had an attitude that if you didn't want to do it their way then something was wrong with you." Just remember that there are still **archipelagos** (sans 24-hr., toll-free support) for such free thinkers.

We look forward to the imminent release of MILO and we wish him well. Until then, the **final synthesis** is that here you have the first official piece of modern-Macintosh BBS **vaporware**. Who would have thunk it? But of course, in a dialectical world, the march of history is process, maybe even in **beta** by the time you read this. A basic working model of history (and MILO) may be available real soon. But, until then, if you want more information you can contact the authors at Colen's board (**503**)**343-2742** (BBS); Greg at the **PWRS1** account or as **Goberfield** on **AOL**. You can also reach them on **Olympus**, the **Hermes** support line, but not for very long, we suppose.

MAC BOARD OF THE MONTH

VillageMac, based in Southern California, is a relatively new BBS based in La Verne and serves the La Verne, Clare-

mont, Covina, Pomona, Diamond Bar, Ontario, and San Dimas locales plus all other points on the globe. **Marvin Price** is the sysop and he's put together a pretty interesting place to visit. Running **FirstClass** software on a Mac-IIIfx server, **VillageMac** (unabashedly Mac-ish) offers numerous conferences and file sections including 2 (count 'em) CD-ROMs online all the time. Marvin also carries daily **NewsBytes** Computer News Updates and **ModemNews** Electronic Magazine.

By the time you read this, Marvin, an ambitious fellow, hopes to launch an Internet news conference in addition to becoming a node for a **FirstClass**-networked server to server conference. He also makes his board available to private groups and companies who wish to supply electronic customer support. While **VillageMac** is free, donations are gladly accepted and put back into the system. **VillageMac** supports **V.22bis** up thru **V.32bis**, and the help available to novices is noticeable on the board and in the literature Marvin sends out.

One of the more interesting conferences on **VillageMac** is the **Cyberspace** conference which discusses other bulletin boards and modeming in general. And, an idea we heartily applaud, the **Cyberspace** forum on **VillageMac** even includes **TeleFinder**, **FirstClass** and **Novalink** user software files from a number of other bulletin boards. We were wondering when that would happen. Good going, Marvin!

On the topic of **Cyberspace** and modeming issues, Marvin says, "It is something I wish to promote. There is something that is hard to explain about all of this, but I feel that if we (the modeming virtual community) do not promote this, it may be taken away from us. Instead of what it is now, it may wind up something like (gasp!) television or Prodigy. The biggest concern," he continues, "is how to get people who do not use modems now, to use them and recognize their value. Information on communications technology and information services. . .has to be circulated as widely as possible."

So give **VillageMac** a call and let Marvin know what you're doing to promote the use of modems and online technology. We'll check back later with

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VillageMac and let you know the results. VillageMac; (714)593-6862 (BBS); (714)596-9560 (voice).

[Bill Gram-Reefer, based in Concord, California, is a publicist working with Comstock Communications. He operates WORLDVIEW? BBS (510) 676-2919 running on a Macintosh computer. As the former editor of SHOWPAGE and associate publisher of Western MicroMarket, Bill has been writing about Macintosh computers since 1984.]

LEGALLY ONLINE

BBSs IN SEARCH OF A VOICE

Will sysops ever organize to create a clear, loud voice for BBSs in a world of power and politics? There is no obvious answer in sight. Several groups have

made the attempt at a national level, such as the Electronic Networking Association and FidoNet International. Up to now, such groups have become moribund after a while, or crumbled under the weight of too many individual opinions and agendas.

There are quite a few smaller BBS groups around too, such as the United Sysops Association on the West coast, and the startup Professional Sysop Association in Canada. They may have large-scale aspirations, but for the present you have to press your ear pretty hard against the ground to pick up signs of their existence outside their local areas. Their growth, if any, tends toward the slow and steady. Many of the smaller groups wink in and out of existence like the lights of fireflies on an August eve.

There is also, of course, the Electronic Frontier Foundation, based in Cambridge, Massachusetts. The EFF devotes a lot of attention to BBSs, strongly proclaiming their First Amendment rights and their protection from burden-

some government actions. It is performing a valuable service to all BBSs by assisting Steve Jackson Games in a lawsuit against the U.S. government for illegal search and seizure of a BBS, and it helps sysops greatly in a variety of other ways. However, there are limits on how far the EFF can serve the specific needs of sysops, due to its mission of serving the entire online community.

For example, the EFF's sights are often set on the global communications infrastructure and the nations and multinationals that control it. The concerns of work-a-day BBS's do not figure largely in such high-level affairs, except as one abstract value among many others. At the same time, the stands taken by EFF on behalf of individual system users can conflict with BBS goals in such areas as user privacy and law enforcement against destructive callers to BBSs. As a result, the EFF's various constituencies sometimes need to jockey for a good spot on the EFF agenda, and there is a need for compromise between competing groups within the EFF. The recent appointment of Cliff Figallo, the

former General Manager of The Well (one of the largest and most respected BBSs) to run the EFF's Cambridge office may help direct the EFF a bit more toward BBS concerns, though the inherent tensions and need for compromise remain.

So despite the EFF's undeniable importance, there is no group that is tightly focused on the unique needs of sysops, and that operates as a substantial national organization. Do we need such a group? Well, an effective national group could help sysops across the country pool resources and strategies for dealing with the anti-BBS depredations of various local telephone companies; it could help sysops monitor and respond to state and federal legislation exposing sysops to new criminal risks, taxes, or other legal burdens; it could lobby affirmatively on behalf of BBSs for laws that would benefit all sysops; it could help assure that the existing organizations of large online businesses, such as the Electronic Videotext Association and Information Industry Association, do not influence legislation in a way that benefits the large online business while depriving the small BBS; and so on.

These goals may seem too lofty to contemplate realistically today. Yet as BBSs continue to grow in number and influence, as they continue to sustain an increasing number of livelihoods and careers, it will become more and more important to assure that the needs of their owners are heard in those places where social policies and laws are determined.

In other words, yes - we do need at least one strong, national sysop organization, and our need will grow over time. The pertinent questions are whether any such groups will in fact come to exist, and whether they will grow from seeds already planted today.

One candidate for the strong sysop organization of the future is one of the most recent of the firefly lights, a group known as Florida Sysops Incorporated, or FSI. FSI was started up in January of this year among the sysops of Brevard County, Florida, and currently numbers about 30 strong. Its de facto leader is a sysop named Alex Rose (no relation), 32, who runs the **Starship Enterprise**



BBS ((407)383-9820) in Titusville, FL, population 50,000. In his day job Alex is an accountant and manager of many real estate related investments, including interests in landfills, rock mining, heavy equipment, shopping strips and office complexes. As if that isn't enough, Alex is also the founder of DoorNet, a new national BBS network devoted exclusively to the distribution and support of door programs for BBS software. Also active in FSI is another local sysop named Danny Burdick, who first told me about the group.

FSI first formed in response to concerns among the local sysops about the dangers of the RBOC monopolies to the little guys on the phone system and the possibility of overbearing anti-BBS regulations by the FCC and other government agencies. The Brevard County sysops did not have any bad experiences with their own phone company, but they saw BBSs troubled by unfair RBOC rate increases in Kansas City and elsewhere, and figured their own

number could come up at any time. They decided to become prepared in advance.

About 15 or 20 people attended the first FSI meeting in January, mostly sysops and a couple of sympathetic users. They were remarkably productive in their first get-together, drawing up the following list of ten objectives for FSI, which has not changed to date:

"1) Maintain an accurate and up to date list of BBS's in our geographic area.

2) Maintain a library (or libraries) for copies of all available BBS software and associated utilities that would be available for new (and existing) sysops to help them start or make changes in their systems.

3) Make available "resource" people for each type of BBS program available, mailers, and general topics (HST modems, CompuCom modems, echo structure, etc.). It would be desirable to

have more than one person available in each category. A separate list will be published with this info.

4) Promote various file and echo networks such as SDS, DDS, Win-net, DVnet. There is much material available from these resources and much is already available for use in our geographic area.

5) Publish a monthly newsletter. This would be distributed with the nodediff and fido newsletter to those members in FidoNet and uploaded or otherwise made available to non-FidoNet systems. Articles would cover happenings in the BBS world at large and in particular happenings within our geographic area. Articles from members are encouraged.

6) Monthly meetings at a central location. We as sysops only know a few other sysops personally, this would give us a chance to meet our fellow sysops and discuss matters that are relevant to all of us.

7) Support various computer groups. Many computer clubs could use assistance in educating their members on how to use a modem and the proper use of BBSs. We as a club could write articles for their newsletters and teach a class or give seminars to bring more users into the modem world.

8) Various listings are available throughout the country, we would like to see more of our systems listed on national and regional publications.

9) To encourage increased interest in BBSs we will offer an Associate Membership in our organization. The Associate Membership will be for those who have an interest in the BBS world but do not run a BBS. If at a later time they choose to run a BBS then they can become a regular member.

10) This organization will serve as a united front to protect the interests of those that utilize BBS systems and those that run them. It will try to serve as a watchdog for actions of government organizations and private organizations that may have a negative impact on electronic telecommunications."

FSI has already embarked on fulfilling many of its wide-ranging goals. To open lines of communication among sysops, they set up two local FSI echoes on FidoNet, FSI and FSIPRIV (the latter being members-only), and another local echo named BBSLAW, which they plan to expand to other areas soon. They put together lists of people who can act as information resources for beginner sysops in various BBS technical areas, including BBS programs, door programs, mail readers, and hooking up to gateways to other networks. They plan a "meet your sysop" get-together in the Fall, possibly on Halloween with sysops wearing costumes illustrating the themes of their BBS'. They began implementing their "watchdog" function regarding state legislation.

The group also hosts meetings with a special topic each month, such as dealing with callers who perform destructive acts on BBSs, and additional meetings with special guests and speakers. These have included meetings with local law enforcement officials and soft-

ware developers, and FSI plans to invite Southern Bell to give a talk in the future. These FSI people are busy.

FSI's meeting last June with the law enforcement officials is particularly interesting. The officials were part of LeTech, a local consortium of law enforcement organizations in Brevard County exclusively focused on the problems and issues of high technology electronic crimes. LeTech's lineup of members is quite comprehensive, including representatives from the Florida state attorney's office, the security department at nearby NASA, the Brevard County sheriff's department, and several local police departments.

The matters they discussed include many of the crime-related topics that surface time and again for BBSs: pornographic GIFs on BBSs; screening the ages of callers to BBSs containing adult materials; the practical effects of bulletins on BBS' telling law enforcement agents to keep out (the police ignore them); the possibility that pedophiles use chat-type BBSs to arrange meetings with unsuspecting children (the police

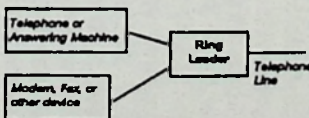
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The INDEX System

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said they didn't know of any actual cases in Brevard County, but they were concerned because it happened in other parts of the country); and sysop liability for viruses (the LeTech people felt that a sysop could be held criminally responsible if a virus from his BBS went into a user computer or a network). Though not all the views apparently held by the law enforcement agents seem particularly fair to sysops, it is heartening that they shared their concerns with the FSI group. FSI plans to invite LeTech back for another meeting in the near future, to continue the dialogue.

FSI is still a brand new organization, and if it lasts and grows as it plans, the activities recounted above will be considered its primordial beginnings. But even these early gropings hold some points worth considering.

For instance, maybe FSI found the magic formula for binding sysops together into a coherent, functioning collective. The impetus for forming FSI may have been vague fears of future overregulation, but the group that got together does not merely have an anti-regulatory or anti-telephone monopoly purpose. They banded together to pursue an array of productive activities: to make their BBSs more influential, useful and well-known, and to initiate new users into the BBS community as both callers and sysops. They are actively developing a greater sense of sysop and caller community, especially in their local area. Ultimately, this sense of shared identity among the members can both make group action more appealing to the members, and make the group more powerful in the world so it can achieve its political objectives.

FSI also set a wonderful example of how sysops can get together to help themselves in its meeting with LeTech. One of the great fears of many sysops is that the law will irrationally clamp down one day on their BBSs, and maybe even themselves, though they may try to do everything right. FSI met these fears head-on by meeting with the LeTech law enforcers. It emerged with a good, practical idea of how to stay out of criminal trouble in Brevard County, Florida courtesy of the folks who ought to know. Likewise, the LeTech agents had a chance to come to terms with this

strange social phenomenon called the BBS, and see that a sysop is not a criminally disturbed nerd, but the guy next door who goes to work and mows the lawn.

As agents' fears that BBSs are high-tech crime toys are dissolved, so are the risks of wrongheaded BBS searches and seizures. Sysops and their BBSs become perceived as fixtures of the community, perhaps a tad more exotic than the crowd at the church or the local bar, but no less deserving of respect or protection. If some crazy kid wrecks havoc on a local BBS, the local agents may be more inclined to help the sysop than in the past (recall how little help the sysops received from the police recently in Decatur, Ill., as I reported in last month's Boardwatch). Of course, the prerogatives of the police can change with the political climate, and local police can't speak for federal agencies. But nonetheless, the mutual acquaintance of sysops and law enforcement agents being fostered by FSI is invaluable, and a model for how sysops can improve their lot across the country.

FSI could grow into an important organization, or it could twinkle out of existence in a couple of months. But in its brief young life, it has already demonstrated there are many avenues yet for sysops to explore in the quest to put together an organization that can serve their interests on the local, national and global stages.

[Lance Rose is an attorney practicing high-tech, computer and intellectual property law in the New York City area, and is available on the Internet at el-rose@well.sf.ca.us and on CompuServe at 72230,2044. He works with shareware publishers, software authors, system operators, technology buyers, interactive media developers, on-line database services and others in the high technology area. He is currently revising the book SYSLAW, a legal guide for bulletin board system operators. - Editor]

INTERNET NEWS

HOW AND WHY TO ACCESS THE INTERNET

The Internet began life as the ARPA Internet, an experiment in linking LANs operated by governmental departments and DOD contractors in the late '60s. Today, the definition is very much in flux with old Internet hands ferociously defending historical definitions while reality is busy expanding them. Today, this Internet links over 700,000 host computers around the country and features ties with systems in over 81 countries around the globe.

It is primarily designed as a network for education and research and it is funded by the National Science Foundation. The hardware heart of this Internet is the NSFNet backbone - a T1 network (in the process of conversion to T3) linking some 32 "regional" networks around the U.S. These regionals primarily exist to connect University computer science departments to the network, and it has reached the point where it would be a very rare college or University within the United States that did NOT have an Internet connection.

More recently, various regionals, in an effort to become self-supporting, have begun offering Internet connections to companies and individuals under various fee structures. These range from \$20 per month up to as high as \$85,000 per year for various levels of connectivity. A typical dialup Unix shell account is about \$30 monthly, but some are as little as \$10 monthly.

There are four primary functions in the primarily Unix environment of the Internet that cause users to cough up such cash. Through these four basic functions a world of information and connectivity opens up. The functions are mail, ftp, telnet, Usenet News. There are numerous protocols and technical means of making the connection, but these are the four basic functions all else revolves around.

BOARDWATCH MAGAZINE

NATIONAL LIST OF INTERNET HOST SERVICE PROVIDERS - OCTOBER 1992

ORGANIZATION	ADDRESS	VOICE	FAX	E-MAIL
BARNET	Pine Hall, Room 115	Stanford University	Stanford, CA 94305	info@nic.barnet.net
CERNET	3550 General Atomics Ct.	San Diego, CA 92121-1194	(415)725-1790	help@cernet
CICNet	2901 Hubbard	Ann Arbor, MI 48109	(619)455-3900	info@cic.net
Colorado Supernet	P.O. Box 39	Golden, CO	(313)998-6103	kharmann@csn.org
CONCERT	P.O. Box 12889	Resch Triangle Pk, NC 27709	(303)273-3471	info@concert.net
CREN	1112 16th Street NW	Washington, D.C. 20036	(919)248-1466	conklin@blinc.blinc.net
CSUNET	Information Resources and Tech.	Seal Beach, CA 90740-7842	(202)872-4200	chris@calstate.edu
Datanet	P.O. Box 228 Fautaltenkaia 10	Finland	(213)985-9669	seppo.noppa@tele.fi
FARNET	100 5th Ave.	Waltham, MA 02154	35831 243-2242	breeden@farnet.org
JVNCNet	B6 von Neuman Hall	Princeton, NJ 08544	(617)890-5117	heker@jvnc.net
Los Nettos	4676 Admiralty Way	Marina Del Rey, CA 92092	(609)258-2400	los-nettos-request@isi.edu
MentMichNet	2901 Hubbard	Ann Arbor, MI 48105	(310)822-1511	jogden@merit.edu
MIDnet	501 Building 113.1	Lincoln, NE 68588	(313)764-9430	cfarnham@unl.edu
MRNet	511 11th Ave.	Minneapolis, MN 55415	(402)472-8971	dfazio@sasco.com
NCAR	P.O. Box 3000	Boulder, CO 80307-3000	(612)342-2570	choy@ncar.ucar.edu
NEARnet	BBN 10 Moulton St.	Cambridge, MA 02138	(303)497-1222	nearnet-joint@nic.near.net
NETIllinois	1304 W. Springfield	Urbana, IL 61801	(617)873-8730	badger@vmd.cso.uiuc.edu
NevadaNet	4505 Maryland Pkwy.	Las Vegas, NV 89154	(217)244-1258	greyfox@nevada.edu
NorthWestNet	15400 S.E. 30th Pl. Ste. 202	Bellevue, WA 98007	(702)597-4500	ethood@nwnet.net
NSFNet	Bolt Beranek and Newman, Inc.	Cambridge, MA 02174	(206)562-3007	ccarroll@nmsc.nsf.net
NYSERNet	111 College Pl.	Syracuse, NY 13244	(617)873-3087	info@nysernet.org
OARnet	1224 Kinnear Road	Columbus, OH 43212	(315)443-4120	nic@oar.net
Onet	4 Bancroft Ave., Rm. 116	Toronto, Ontario M5S 1A1	(614)292-8100	eugene@vm.uts.utoronto.ca
PREPnet	305 S. Craig Street	Pittsburgh, PA 15213	(416)978-5058	prepnet@andrew.cmu.edu
PSCnet	Pittsburgh Supercomputing Ctr.	Pittsburgh, PA 15213	(412)268-7871	hastings@psc.edu
SDSCnet	San Diego Supercomputing Ctr.	San Diego, CA 92186-9784	(412)268-4960	lovep@sdsc.edu
Sesquinet	P.O. Box 1892	Houston, TX 77251	(619)534-5043	gethoo@rice.edu
Sprint International	13221 Woodland Park Drive	Herrndon, VA 22071	(713)527-6038	rdoyle@icm1.icp.net
SwipNet	P.O. Box 6048	Sweden	(703)904-2167	wallner@swip.net
SURAnet	8400 Baltimore Blvd., Ste. 101	College Park, MD 20740	46 8 924040	mtaranto@sura.net
THENet	Office of Telecommunications Svc, Svc Bldg Rm 319	Austin, TX 78712	(301)982-4600	info@nic.the.net
VERnet	Gilmer Hall, B008	Charlottesville, VA 22903	(512)471-2444	jai@virginia.edu
Westnet	601 S. Howes, 6th Fl. South	Ft. Collins, CO 80523	(804)924-0616	puurns@yuma.acns.colostate.edu
Wisnet	1210 W. Dayton St.	Madison, WI 53706	(303)491-7260	lad@cs.wisc.edu
WVNET	837 Chestnut Ridge Rd.	Morgantown, WV 26505	(608)262-8874	cc011041@wvnmms.wvnet.edu
			(304)293-5192	
			(304)293-5540	

Commercial Internet Service Providers

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ANS	ITI Bldg, G-1	2901 Hubbard	Ann Arbor, MI 48105	(313)663-2482	info@ans.net
Holonet	46 Shattuck Square	Suite 11	Berkeley, CA 94704	(510)704-0160	info@holonet.net
IDS World Network	P.O. Box 874	Suite 209	East Greenwich, RI 02818	(401)885-6855	info@ids.com
NETCOM	4000 Moorpark Ave.	Suite 209	San Jose, CA 95117	(408)554-8649	info@netcom.com
PANIX	363 Second Street		Brooklyn, NY 11215	(718)865-3768	info@panix.com
PSInet	11800 Sunrise Valley Dr.	Ste. 1100	Reston, VA 22091	(703)620-6651	info@psl.com
PORTAL Comm	20863 Stevens Creek Blvd.	Suite 200	Cupertino, CA 95014	(408)973-9111	CS@cup.portal.com
The WELL	27 Gate 5 Road		Sausalito, CA 94965	(415)332-4335	info@well.sf.ca.us
The WORLD	1330 Beacon St.		Brookline, MA 02146	(617)739-0202	staff@world.std.com

MAIL. In our estimation, mail is the most powerful function on the Internet - it actually extends the Internet to other networks that aren't actually "connected" to the system using the Internet Protocol. MAIL is both a Unix program, and a concept revolving around an e-mail addressing scheme called Domain Name Addressing. Domain Name Addressing defines e-mail addresses as **user@system.domain**. My Internet address is **jack.rickard@boardwatch.com** for example - boardwatch being the system in the com (commercial) domain. This domain addressing has caught on so thoroughly, that you can now send electronic mail to virtually anywhere, including CompuServe mail boxes, FidoNet bulletin boards, America Online, and virtually everything in between, most of which aren't, strictly speaking, attached to the Internet. Typically, you enter a command such as **mail jack.rickard@boardwatch.com** and an editor comes up allowing you to compose a message. Mail can be sent to another computer in your building, or to someone in Holland, Japan, Slovenia, or anywhere else with an Internet address at no charge at all for the individual message. Typically, you pay for access to the Internet, by the month, or by the hour, but never by distance or e-mail charges.

FTP stands for the File Transfer Protocol. But that's not precisely what it is. It's actually a way to logon to systems around the world to retrieve files. This is a very limited logon. You cannot browse menus, send e-mail, or search databases. It lets you list file directories on foreign systems, and retrieve files. Typically, from your host, you enter the command **ftp** followed by a site name. The connection is made, and the foreign system gives you a logon prompt. Unless you happen to have a logon account on that particular system, by convention many systems allow **ANONYMOUS FTP**. That is, they maintain a public account for user **ANONYMOUS**. And any password will do but again, by convention, you enter your own e-mail address as the password. The system then allows you to use Unix directory commands such as **ls** for list directory and other commands such as **GET** to retrieve a file. Retrieving a file is basically copying it from the foreign host to your own home directory on your host system. From there, you would download

the file to your personal computer using a local protocol. ZMODEM is becoming increasingly common with the **SZ filename** command sending a file to you as a download, and **RZ** activating the receive function so you can upload files.

TELNET appears to be the part of FTP that is missing. You can logon to foreign hosts by entering telnet host as in **telnet pac.carl.org** to logon to the Colorado Alliance of Research Libraries for example. With telnet, you can browse menus, read text files, and search online databases. In some cases, you can participate in live, interactive games and chat functions with other callers. But, with a few new and clever exceptions, you cannot download files or list file directories.

USENET or **USENET NEWS** is not actually a function, and it isn't exactly a network either. We think of it as a publication actually, published message conferences distributed from a central source via Internet, UUCP, and increasingly other network means. Typically, you use the programs **readnews** and **sendnews** to read messages and reply to them. These are analogous to FidoNet Echomail conferences. But there are now over 2000 of them and the message traffic is a little overwhelming. There are News Groups on every topic conceivable. And if you do conceive of one they don't have, the procedure to create one is not terribly rigorous or difficult.

The big problem with Internet is gaining inexpensive access. In general, you must pay a fee for a dialup account, and you must often pay long distance charges to get to a port where your account is. For some reason, all the cheap accounts are a long distance call away. Anything local is always expensive or very exclusive. In general, the Internet is culturally inclusive and tends to welcome everyone. But there are some regional networks and individuals who once **THEY** are connected, guard the palace gates like a junk yard dog and assume the mantle of guardian of the Internet and protector of the connected from the heathen.

We've pieced together our best effort at a list of regional networks and commercial systems that offer full dialup Internet accounts including mail, ftp, tel-

net, and Usenet News - along with information on how you can contact them. It is presented in the accompanying table. This list is by no means all inclusive. In fact, as we predicted nearly two years ago, individuals and small companies all over the country are putting up bulletin board systems on PCs to offer accounts providing mail, Usenet news groups, and in many cases ftp and telnet access to the Internet. Sprint announced in July a service titled SprintLink that must be the first major telephone company to offer Internet access. We predict over the next year to two years, it will be extremely easy to get an account close by offering as much Internet access as you desire. And none too soon.

SENDIT - NORTH DAKOTA EDUCATIONAL NETWORK

Much of the talk about the National Research and Education Network (NREN) has centered on how to bring K-12 schools onto the network. But some school systems are already making some headway. One of the best implementations of the Internet to K-12 education we've seen is going on right now in North Dakota.

Gleason Sackman is coordinator of **SENDIT**, a North Dakota K-12 Educational Telecommunication Network sponsored by the North Dakota Educational Telecommunications Council and the North Dakota State University in Fargo.

SENDIT is basically an online service or bulletin board. It is accessible both through a public dialup telephone number at **(701)237-3383** and by telnet access over the Internet (**telnet sendit.nodak.edu**). Once connected to the system, you will see the **login:** prompt. Enter **bbs**. The **Password:** prompt will then show up on screen. Enter **sendit2me** as the password.

You can either register for access, or peruse the system as a visitor. Visitor's can't send or receive electronic mail. The service is free of charge. It uses the FreePort software developed by Case Western Reserve University as part of Tom Grundner's FreeNet project.

The system operates much like a BBS, and quite precisely like a FreeNet system similar to Cleveland FreeNet, Youngstown FreeNet, and Heartland FreeNet. But rather than focus on local community and government issues, SENDIT is superbly focused on education.

One prominent feature is K-12Net conferences. K-12Net is a group, now numbering 259, of FidoNet bulletin boards sprinkled all over the globe that was started by Jack Crawford, who for some reason is now claiming the network name as a service mark and trademark. K-12Net is a series of FidoNet Echomail conferences comprising a virtual electronic classroom. It has seriously developed since we listed the full K-12Net list a year ago. We saw messages from several systems in Australia, Dublin Ireland, and around the planet. One Earth Sciences teacher had posted a request for measurements of the length of the day on the summer solstice, June 20, from other students and teachers around the world. He was trying to demonstrate that different latitudes get different amounts of sunlight at any given time.

SENDIT also has local forums - although not precisely local in participation. A Pen Pals area, for example, contains requests from around the world for electronic mail pen pals from the North Dakota area. One Ms. Miki Shimura, an English teacher at Koayu Junior High School in Atsugi Japan, was seeking 14-15 year-old pen pals for students in her class.

The system is also linked to other systems on the Internet - most notably University and Public Libraries in North Dakota, South Dakota, and Minnesota. These electronic card catalogs are priceless research resources where students can search for books and articles by keyword, author, title, etc. We were surprised to see Colorado's own Colorado Alliance of Research Libraries (CARL), undoubtedly the most extensive online library catalog available, on the menu. But the system also featured connections to Cleveland FreeNet, the NASA Spacelink system, and plans for fall 92 include the Library of Congress and Supreme Court decisions. In this way, North Dakota K-12 students can often dial a local BBS telephone num-

ber, logon to SENDIT, and access libraries, and other BBS systems across the country, without incurring any long distance telephone bills.

The system is laid out in a particular rational fashion. Numerous other resources, including some pretty interesting regular electronic newsletters such as the Daily Report Card, offered news of interest to educators. Additionally, the system featured USA Today news, weather reports, and other news items. Overall, it's the best effort we've seen at an online service for K-12 schools that makes superb use of the Internet connectivity that hopefully will be available to all school districts in the future. Contact sackman@sendit.nodak.edu.

SRI RELEASES TCP/IP COMPACT DISK

SRI International has released a CD-ROM disc containing technical information about the Transmission Control Protocol/Internet Protocol (TCP/IP). The easily searchable CD contains all online Requests For Comments (RFC's) and For Your Information (FYI's) released up to February 7, 1992. It also includes all Internet Engineering Notes, GOSIP specifications, and other protocol, security, and miscellaneous information files. One of the more recent additions is source code for the X window system.

The new CD is ISO-9660 (High Sierra) format. An executable search program for IBM PC's and SunOS Sparcstations is included as well as Unix/C source code for the search program. The CD is priced at \$195. SRI International, Network Information Systems Center, 333 Ravenswood Ave., Menlo Park, CA 94025; (415)859-3695 voice; (415)859-6028 fax; E-mail: tcp-ip-cd@nisc.sri.com.

JVNCNET SEPARATED FROM PRINCETON UNIVERSITY

On July 25, Sergio Heker announced to JvNCNet that as of August 1, JvNCNet would become a commercial entity separated from Princeton University.

JvNCNet was an Internet access provider funded by a National Science Foundation grant and operating under the auspices of Princeton University since August, 1990. Over the course of the two years, JvNCNet membership grew some 250%, to the point where the network is considered viable as a self-supporting commercial Internet provider. It was originally part of the Jon von Neumann National Supercomputer Center. JvNCNet was the first operational T1 academic network when it went online in 1986. The company also has begun offering new dialup services to service demand from entry level users.

The new organization will be known as Global Enterprise Services, Inc., B6 von Neumann Hall, Princeton, NJ 08544; (609)258-2400 voice; (609)258-2424 fax.

DIRECT DIAL

AMERICAN INDIANS ONLINE

One of the most dramatic uses for electronic bulletin boards is they way they change the organizational dynamics of groups of people who band together for some particular topic or advocacy group. With a moderate disdain for the politics of advocacy, we do not always cover these types of applications as well as we might. But actually, they represent the magic of this new telecommunications medium as no other does.

The nature of special interest groups is that tend to be made up of volunteers, who have lives, jobs, etc. outside of their work with the group and have some limited resource of time to devote to such activities, no matter how fervent their moral support for the cause. Often,

101 Reasons to Choose

1. No source code is required to integrate add-on options.
2. You can support up to 256 simultaneous users on a single personal computer.
3. ZMODEM, YMODEM-G, YMODEM-Batch, XMODEM-1K, XMODEM, KERMIT, Super KERMIT, and ASCII file transfer protocols are included.
4. A full-screen editor with block commands and paragraph formatting, is included.
5. Message quoting is supported.
6. Proprietary Locks and Keys™ security now gives you *millions* of security levels.
7. Users can log into your BBS through your Novell network.
8. Offer up to 3500 public message Forums.
9. We provide free, unlimited, technical support (within reason).



10. Have as many "classes" of users as you like for accounting and security purposes.
11. It includes a multi-user teleconference with 65,535 channels, "whisper", "scan", and "moderate" commands.
12. An MHS gateway is included; share messages with cc:Mail, DaVinci E-Mail, and other MHS applications.
13. You can even send MHS messages to other gateways, including MCI Mail, Compu Serve, Internet, X.400 networks...
14. Users can view the contents of .ZIP, .ARC, .LZH, and .ICE files online.
15. You can create weekly, monthly, quarterly, and yearly subscription accounts.
16. Bar graphs are displayed for a variety of system usage statistics.
17. A common group of "keys" can be combined into a "keyring" that can be shared by many users.
18. An online polls-and-questionnaires facility is included.
19. Users can request "return receipts" and send "carbon copies" of E-mail to individuals or distribution lists.
20. A direct-connect X.25 network option is available.
21. You can tag a group of files to be downloaded at once with a batch transfer.
22. You can design your own menu tree with options leading to BBS functions, file displays or other menu pages.
23. Runs under regular MS-DOS 3.3 or better — no multitasking OS required!

24. User account information can be saved to fixed-length ASCII and imported into dBase, Paradox, Q&A, etc.
25. An Audit Trail tracks all transactions on your system; powerful searching utility included.

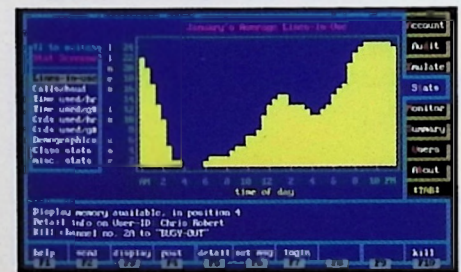


26. Experienced users can jump directly to menu options using a "GO" command.
27. One-on-one chat mode is included.
28. You can generate mailing labels for direct mail campaigns.
29. The File Library can have unlimited sub-libraries, each with its own DOS path.
30. CD-ROM drives are supported.
31. Keyword searching, file attachment, and message threading features are included in the Forums.
32. You can monitor all system activity at once from your main console.
33. Users can page each other throughout the system.
34. A user registry database lets everyone publicize some information about themselves.
35. You can copy whole menu branches, edit their parameters, and re-order menu options.
36. An ANSI drawing tool is included that helps you create customized menu displays that dazzle your users.
37. You can offer "upload royalties".
38. BBSETUP automatically finds communications hardware in your computer and configures channel groups for you.
39. You can use all COM1, COM2, COM3, and COM4 ports at once.
40. Users with different keys can be routed to different menu branches.
41. Users can be routed to different menu branches according to the phone number they dial — run multiple BBSes at once!



42. Each Forum can have its own teleconference for real-time discussions.
43. The full 'C' source code is available.

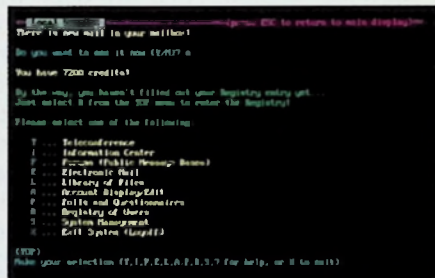
44. An "emulate" feature lets you peek over the shoulder of any user, putting your keyboard and screen in parallel with theirs.
45. On pay-for-use systems, online time can be metered by the second.
46. We include SPXTALK, our LAN access terminal program.
47. If a user doesn't have access to a menu option, you can either display it, dim it (using ANSI color), or hide it completely.
48. You can let callers use full names or aliases.
49. You can arrange for the system to shutdown and execute batch processes at configured timed events.
50. You can assign read-only, read/write, or co-management access to Forums.
51. Each Forum can export messages to an MHS address for networked group mail services.
52. You can allow users to "run up a tab" and generate a report every month or every week for billing purposes.
53. There are dozens of third-party developers providing add-on software for The Major BBS.
54. There's even a built-in screen saver.
55. Because the BBS runs in protected mode, you can add several megabytes of add-on software.
56. We offer hardware solutions to rack up dozens of standard COM1/2/3/4 internal or external modems to your computer.
57. You can reset or busy-out any of your lines from the main console.
58. Our advertising tells you what we can do for you, not what motorcycle our president rides to work.



59. We don't use exclamation points in our product name — it speaks for itself.
60. Our literature doesn't repeat our president's name every three paragraphs.
61. Our Remote Sysop Menu lets you control your BBS from anywhere in the world.
62. Users can automatically log off the system after an upload or download is completed.
63. You can restrict your system from allowing new sign-ups for a completely private-access BBS, if you like.
64. Modem/serial connections up to 38,400 bps are supported.
65. Authorize as many co-Sysops as you want.
66. Offline reports are available for user accounts, user "classes", user "keys", Forum access, and more.

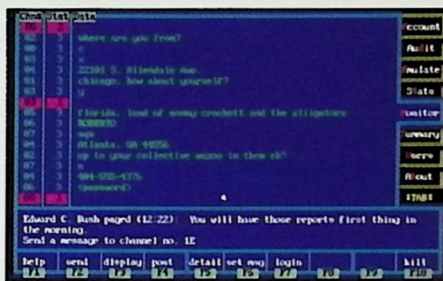
Use The Major BBS

- 67. A Top 10 Downloads list is maintained for each sub-library.
- 68. Users can forward or copy E-mail and Forum messages.
- 69. You can have two CRTs at your Sysop console, for a panoramic view.
- 70. Our full-screen configuration editor lets you easily customize all the messages in your system.
- 71. A Shopping Mall add-on option lets you handle catalog sales and online order entry.
- 72. Supporting more simultaneous users is as easy as installing "User Six-Packs" and plugging in additional modems.
- 73. Users can make public or private replies to Forum messages.
- 74. The Sysop console provides context-sensitive help.
- 75. You can edit user accounts directly from the Sysop console.



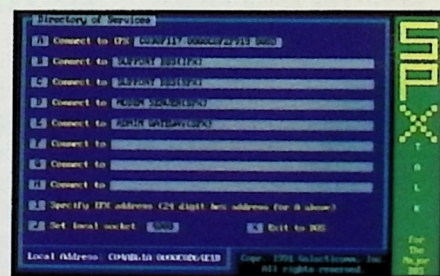
- 76. You can perform elementary DOS commands while the system is running: COPY, DIR, DEL, REN, MD, etc.
- 77. A database add-on option lets you create custom data entry or search-and-retrieve services online.
- 78. Our B-Tree indexed database engine assures power-fail data integrity.

- 79. Users can have E-mail messages "auto-forwarded" to another User-ID or a MHS address.
- 80. Old messages and unused accounts can be automatically purged from the system.



- 81. New users can be automatically sent a welcome E-mail message with a help file attached.
- 82. The entire documentation has been rewritten with screen shots, diagrams, tips and tricks, and a clear writing style.
- 83. Connect-time charges can vary for each function or Forum in the BBS.
- 84. Automatic Software Update Program is available on a yearly subscription basis.
- 85. You can log on locally from the main console exactly as if you had called in over a phone line.
- 86. Users can resume aborted downloads.
- 87. A User-ID cross referencing feature lets users quickly find who they want to write a message to, even if they don't know the full name of the recipient.
- 88. You can import text into messages from other messages or ASCII text files.
- 89. As the Sysop, you can log on in "invisible mode", to go about the system undisturbed.
- 90. You get a 30 day money-back guarantee.

- 91. Users can edit their account information in a full-screen data entry mode.
- 92. You can ask up to 10 custom sign-up questions when a user creates a new account.
- 93. A neat utility lets you globally change all the ANSI colors in your configured messages.
- 94. You can configure the BBS to automatically suppress profanity.
- 95. A Games and Entertainment add-on option is available which includes multi-user poker, blackjack, bingo, Flash™ games, hangman, a multi-player text adventure and more.
- 96. You can have a time limit per call and a time limit per day for each user.
- 97. The Advanced LAN Option is available for even more flexibility with your Novell network.
- 98. There's a 976-BBS add-on option that lets your customers purchase online time via a 976- or a 1-900- number.
- 99. You can receive round-the-clock support on our own Demo System BBS; give it a call at (305) 583-7808.
- 100. Installation and configuration is simple and easy; you'll be "on the air" within minutes.
- 101. We're really nice folks who want to provide you with the best BBS software in the world.



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the reason for having such a group is that you are in the minority - everywhere. And while a handful in Lansing is but a handful in Lansing, when added to the handful in Bismark, the handful in Dallas, the handful in St. Louis, and the many handfuls scattered geographically across the land, as a group you become a sizable number. Electronic bulletin boards ameliorate both of these problems - time and geography - in a way nothing else has. The store and forward nature of BBSs allows members to participate as they can, at what time they can, without the rigors of arranging to be at a meeting, driving there, etc. Because access from two miles down the road is about as good as from two states away, geography is not as serious a consideration either.

The American Indian has found political voice. And more recently, they've discovered the BBS technology as a means of not only communicating political causes, but also in sharing their art and culture.

Ron Deere operates a two-line Searchlight BBS outside of Montreal Quebec titled **The Igloo Station** at (514)-632-5556. Searchlight software has generally been underrated in comparison to more powerful competitors such as Wildcat! and PCBoard. But this package deserves further attention. It is quite easy to operate, and provides a very attractive and relatively easy to use presentation for callers through some pretty cunning use of ANSI graphics. Deere has put this to play on this tiny system in a capable fashion.

The primary theme of Igloo Station is North American Indians and in a wider vein, indigenous peoples globally. A native himself, Ron hosts a message conference on SL_NET titled **NATIVE** and posts under the name of **TEIONNION'KWATA:SE**. If nothing else, he demonstrates how to moderate a topical message conference. Rather than put out flame wars and hope something happens, Deere actively posts news articles and tidbits about various indigenous issues. We found excerpts from Oglala Sioux spokesman Russell Means' speech on why Columbus Day should not be celebrated as a holiday, and a report from the World Bank on their new indigenous populations policy. There were several messages de-

tailoring the progress of a Quebec trial. Some 33 Mohawk Indians faced some 88 charges growing out of their seizure of a clinic in Quebec during heated debates over land claims. After five days of deliberation, a Canadian jury found them not guilty on all counts.

This tiny system is entirely free of charge - a \$12 annual subscription is required to access a CD-ROM shareware collection, but regular callers pay nothing to access these message areas.

Meanwhile, down in the great plains, The **Dakota BBS** operates at (605)341-4552. Located in Rapid City, South Dakota, this system serves citizens of the Lakota, Dakota, and Nakota tribes residing in Western South Dakota. Approximately 7% of the population is Indian in this area. And The Dakota BBS also covers some of the political landscape of interest to Indians. Running under a delightful installation of Remote Access version 1.11, this system is easy to use and well designed. Announcements on the system include a calendar of POW WOWs such as the 17th Annual American Indian Club POW WOW held in Montana.

The mission of this system is to "promote the self-sufficiency of American Indians and rural people," and the system seemed as much directed toward economic opportunity and self-help as it was to strictly political and legal issues. This past summer, they hosted participants from the Shannon County School System and the Tetakuya Summer Institute.

The system also has clearly had some of the Dave Hughes touch. Like Cynthia Denton's Russell Country BBS in Montana, The Dakota BBS offers American Indian Art online through the use of NAPLPS graphics. NAPLPS terminal programs were available for download and an Indian Art area displayed about 15 NAPLPS graphic frames created by Indian artists. These graphic displays are really quite stunning. They are offered as "shareart", a Dave Hughes invention that we've never quite understood entirely, and hold little hope for as a career field any time in the near future. Ostensibly, you can view the images, and if you like them, you pay for them. I guess it more or less worked in soft-

ware but I'm unclear on the prospects for artists. But these artists do create some graceful and colorful pictures.

Hughes is also working with several other Montana tribes to setup bulletin boards to assist in some of the reservation schools, tribal functions, and so forth. It may not be long before the beat of drums is heard quite widely - by modem.

OFFICE SUPPLY ONLINE SALES.

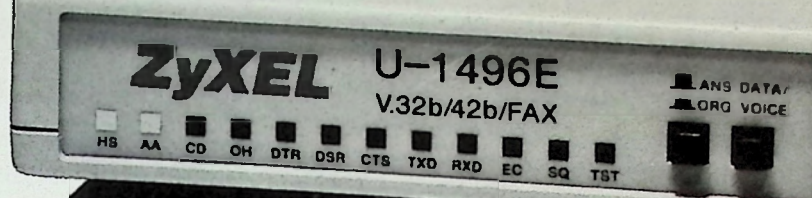
I confess some fascination with online mail order sales. This is probably because I order a good bit of what I need mail order - everything from books to CDs to computer systems. There is something about picking up a telephone, talking into it, and making the UPS gal walk through my door with boxes of stuff. Probably more importantly, I don't have to GO anywhere, walk through the miles of aisles, stand in the checkout line for twenty minutes, and fumble around for the magic combination of drivers licenses, checks, credit cards, and cash that the current and particular heroic intellectual giant behind the cash register will accept in ransom to release me from the experience. There is no traffic or parking involved in mail order. Just a phone, a small square of plastic, and usually five minutes of time. Rarely do I really need anything very quickly, and most mail order firms get things to you VERY quickly.

The obvious improvement would be in mail order shopping online. Anyone should be able to put up a complete inventory database - they all have it on computer anyhow - and allow me to search for particular items by manufacturer or description. I could key in my own address and credit card number and not have to shout the same address or credit card number into the telephone six times before it was entered approximately correctly. And I could order at 2:00 AM, when both I and their computer were up working, and when most of the mail order lines are closed.

This really isn't that much of a challenge. Not only should this be possible, it should be rather dramatically less expensive for everyone involved. One of

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Digicom 9624LE+	\$695	NO	NO	NO	NO	NO	NO
Practical 14.4 SA	\$549	YES	NO	NO	NO	NO	NO
Microcom QX/4232bis	\$899	YES	YES	NO	NO	NO	NO
Hayes Ultra 14.4	\$999	YES	NO	NO	NO	NO	NO
U.S. Robotics Courier V.32bis	\$995	YES	YES	NO	NO	NO	NO
Telebit T3000	\$949	YES	YES	YES	NO	NO	NO
Multimodem MT1432BA	\$899	YES	YES	YES	NO	NO	NO
ZyXEL U-1496E	\$469	YES	YES	YES	YES	YES	YES

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the biggest costs to mail order companies is the labor involved in answering the telephone, taking down the order information, and keying it into the computer. Once in the computer, most mail order firms are already highly automated with the system submitting credit card charges, printing out invoices, packing lists, and mailing labels quite automatically. Finally, someone reads the label, pulls the merchandise from the shelves, puts it in the box, and closes it up. If I enter the data myself online, 2/3 of their labor costs and MOST of the mistakes that occur just evaporated. So ordering online should be cheaper than dialing a voice telephone.

Sadly, in most cases it is not. Most of those who have attempted to set up modem ordering lines have for some bizarre reason wanted to charge HIGHER prices for the "service" of providing online ordering. Good work if you can get it, but it doesn't make any sense. It isn't THAT much harder for me to order by voice that I would pay anything different. The savings are to them and if anything, we should get a price break.

In any event, hope springs eternal. In publishing a magazine, we go through a lot of office supplies - paper, pens, labels, legal pads, rubber stamps, folders, envelopes, and other assorted office detritus. Most small companies and home offices do as well. There are ENORMOUS differences in price from one store to the other, and it is not the sort of purchase that engenders any "fun" in comparison shopping. Office supplies just don't stir the same juices that shopping for a Porsche or even a new suit do. They are generally just boxes of stuff you have to have lying around if you are to accomplish anything.

So we were intrigued by a new service titled PENNYWISE, an office supply firm in Edmonston, Maryland, that sells office supplies by modem. The system is available on a toll-free 800 number at (800)752-3012. For those driven to spell things with 800 numbers, I think this spells 800-PKA-D-oper-1B. Not as cunning as some, granted.

The 2400 bps system asks for your company name, shipping address, billing address, and telephone number. This data will be used in completing your

order later. The software is very plain, and operates on the ACCOUNT NUMBER/PASSWORD identity paradigm. This is a big minus immediately. If you want to order regularly, you have to remember this account number. There seems to be a computerized plot against mothers, to usurp their prerogative in naming their children. Some days, it seems as if everyone online has already decreed my name to be somehow inadequate, and determined to wean me from it - replacing it with some form of ID code, account number, or other oddity and urging me to WRITE THIS NUMBER DOWN for I will need it later. If you could see the pile of 900 or so slips of paper, fax printouts, note pads, etc. piled literally a foot high across an acre of desk here, you would understand why I don't get the connection. If I really am going to need it later, the LAST thing I would do is write it down and consign it to THAT lost pile of the Indies.

The service does offer some interesting items. One is a list of catalogs. You can ostensibly check off catalogs of interest from a menu of some 39 offered. Pennywise will then forward your catalog

14.4 MODEMS

V.32bis - V.42bis - FAX - 14400 BPS

Internal \$243 External \$295

- Made in USA
- 5 Year Warranty
- Group III S/R FAX
- Error correction & Data compression
- Internal Version is 16bit Card
- Outstanding Performance
- Simple Setup and Configuration

703-892-4922,11
Online Ordering System

703-892-4922,22 (Extension 22)
Voice Inquiries

Other Equipment & Configurations Available

Innovative Technologies Group Inc.
P.O. BOX 3112 Arlington VA 22203

request to the appropriate company, who then forward you the catalog. Actually I like catalogs. And the system had several of interest, including one for mail room supplies, another for fax paper, a cigar/tobacco catalog, one for photographic supplies, another for projection lamps and AV supplies, a catalog for exotic/specialty laser printer paper, and so forth. There was even a most intriguing offer for a free sample of something or other for those suffering from dry, cracked, or itchy feet. We checked off several.

The system then displayed our choices. Actually, it displayed a screen that indicated we wanted ALL the catalogs - which we didn't. But no matter what you check off, apparently they send you all of them. A minor bug in the software, but irritating.

Actually, this could be a good idea for a service all itself. There are literally tens of thousands of catalogs published in this country each year. A database of catalogs would be fascinating and a system where you could call and order free or even priced catalogs from a database

of several thousand would be fantastic. The BBS could charge the catalog companies a few cents for each name it forwarded to them. And the catalog companies could add the name to their own house list - as well as forwarding the catalog. Mail order companies buy, sell, and swap lists in a virtual frenzy constantly.

The system also offers office supplies with categories of products in a menu tree. It claims to offer a keyword search, but these are simply more menus of words with products classified beneath them. Likewise the Manufacturer search is simply five or six screens of manufacturers - each with a three character code. This system could use some help in the search area.

As to selection, there seemed to be a number of things listed, no way of telling how many. We were unable to find labels for our SEIKO label printers - which everyone around here is completely in love with. But we did find a modest selection of the basics.

Pricing was rather ordinary. It did not seem extravagant, but there were no real eye-popping bargains. A Laserjet toner cartridge was \$79.95 - about normal. A dozen yellow legal pads for \$3.49 - not bad. A box of Avery laser printer labels was \$22.95 - actually about three or four bucks on the high side I thought. A box of 10 3.5-inch floppies was \$9.89 - again, about right.

One thing we did try was the rubber stamp ordering function. You can order rubber stamps online and enter the text that it will stamp. We picked up a seven line stamp for about \$17 and an ink pad for \$1.95. We entered each line of text, specified a type style, font size, and that the text be centered. You can also fax them your particulars if you prefer.

The system rather cleanly summarized our order, offered Amex, MC, Visa, COD, and Pennywise Charge Account payment options. They claimed our order would be shipped within 24 hours. Although they often noted there was NO shipping charges at all, when you order computer hardware or software, they do note an exception and apply shipping charges. There is a \$25 minimum order - not too difficult to reach actually when purchasing office supplies.

Overall, the system is a little slow and plain. But they have done a good job of keeping things simple. It is usable. The prices are about what you would pay at a BIZMART, at least they're not at a premium. And the ability to order custom work like rubber stamps online is attractive. Pennywise, 4350 Kenilworth Ave., Edmonston, MD 20781; (301)699-1000 or (800)942-3311 voice; (800)622-4411 fax; (800)752-3012 data.

THE INTERNATIONAL FIDONET - 15,649 BULLETIN BOARDS WORLDWIDE WITH A CONNECTION

Like many things, it started in San Francisco, California. In the early months of 1984, Tom Jennings was working on what would be version 7 of his BBS software, known as Fido. This new ver-

sion would let a user write a message on Tom's board, and that message would then be sent to John Madill's BBS in Baltimore that night - when telephone rates were the least expensive. A user on John's board could also send a message back to Jennings's system. This simple mail exchange was the beginning of what came to be known as FidoNet. Its purpose, in the beginning, was to see if it could be done, merely for the fun of it.

This early version, released sometime in June of '84, didn't really do much. It had no routing or cost accounting, no control on how many times it would call a node, no error handling or log files, and could not do a file attach or request. It could create an e-mail message packet, place the call, and transfer the packet.

By August of 1984, the number of "nodes" using this software to exchange mail had grown to almost 30, and according to Jennings (Fido #1), the net was becoming clogged. Fido was not very smart when calling a system to send mail. At that point, there were six nodes in St Louis, and if Fido #1 wanted to send a message to each of those nodes, it had to make six long distant calls to six systems that were all within local calling distance of each other. It was obvious only one call should be needed. Coordinating had become difficult and it sometimes took days to repair the slightest problem, such as a modem not answering or having a wrong number in the nodelist.

To get a node number was simple. You left a message on Fido #1 that you were ready and you wanted a node number. Jennings would put you in the list with your phone number and the other nodes would call and download the list. In September '84, the number of nodes climbed to over 50, and the net started to deteriorate. Each week there was at least one wrong phone number. Jennings would sit up at night and watch his system call some poor old lady every two minutes at 4:00 AM.

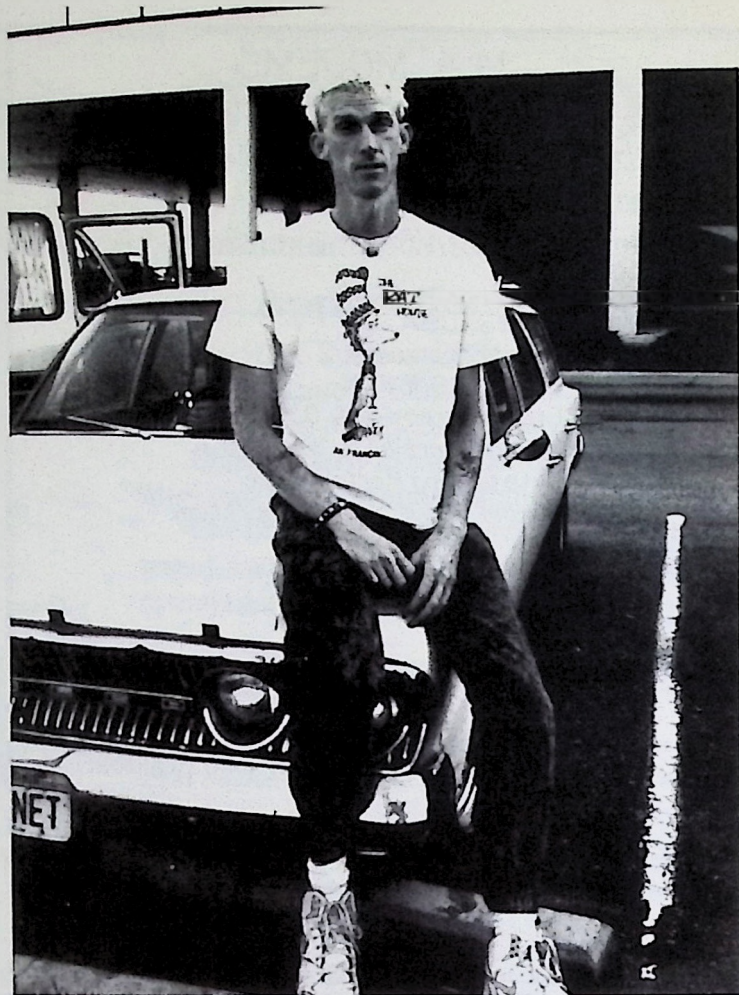
At the same time, Jennings was changing the Fido software almost daily and losing some of the new node requests. With all the work Jennings was doing, he started assigning nodes by voice, which got him into more trouble. It be-

came obvious that there had to be a more rational way to assign node numbers. The group in St. Louis, including Ben Baker, Ken Kappan, and others, volunteered to take over the node list and handle the new node requests. By February 1985 they had the error rate down to almost zero and the total nodes in FidoNet to over 160.

In 1986, Jeff Rush was trying to organize a pizza party for FidoNet BBS operators in the Dallas/Ft. Worth area. He devised a method for "echoing" an entire message area on his BBS to the other BBSs in his network using netmail. Any message entered into that particular area on any BBS in the network, would appear in that same message area on ALL networks. The idea caught on wildly and today, the vast majority of Fidonet systems join to gain access to echomail. Many conferences enjoy thousands of participating BBS

and any one Fidonet BBS may carry 50, 100, or more of the 400 topical echomail conferences online.

The reason echomail caught on so solidly was that it solved a basic problem for bulletin boards. If a BBS had a single message "conference" where anyone could post a message and everyone could read it, the conference could be VERY confusing to read if there were several different "discussions" or "threads" going on at the same time. To make this rational, BBS operators set up a series of conferences where discussions on programming would be in one conference, political discussions on another, and so forth - by topic. The problem with this was, that once a system attained enough different conferences to topically handle all the discussions the callers wanted, there were only a couple of callers active in each conference.



FidoNet Founder Tom Jennings

INTERNATIONAL FIDO NETWORK

LIST OF ZONE AND REGIONAL COORDINATORS

NET/NODE	NETWORK	DATA PHONE	COORDINATOR	LOCATION
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ZONE 1 - NORTH AMERICA

1:1/0	North America	717-657-7097	George Peace	Harrisburg PA
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1:10/0	Calif Nevada.....	714-838-6539	David Garrett.....	Tustin CA
1:11/0	Central.....	614-841-0355	Mark Lynch.....	IL IN KY MI OH WI
1:12/0	Eastern Canada.....	519-250-8414	Bryan Hochberg	ON PQ NB PE NS NF
1:13/0	Mid Atlantic.....	703-323-7654	Bill Andrus	DC DE MD NJ NY PA VA WV
1:14/0	Mid West.....	417-673-2283	Tim Pearson	IA.KS.MN.MO.NE.ND.SD
1:15/0	REGION15 COORDINATOR.....	602-258-8347	Marv Carson.....	AZ CO NM UT WY
1:16/0	New England	203-791-8532	D Dawson.....	CT ME MA NH RI VT
1:17/0	North West.....	604-584-9811	Bob Satti.....	AB AK BC ID MB MT OR
				NWT SK WA YT
1:18/0	SouthEast/Caribbean	919-887-6580	Ben Mann.....	AL FL GA MS NC SC TN PR
1:19/0	TX AR OK LA	214-881-2627	H Clark	Plano TX

ZONE 2 - EUROPE

2:2/0	Europe etc	358-0-2983308	Ron Dwight	Finland
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2:20/0	Sweden.....	46-40-549189	Mats Knuts	S
2:21/0	Norway	47-2-221064	Ola Garstad.....	N
2:22/0	Finland.....	358-0-881562	Ari Backholm	SF
2:23/0	Denmark	45-86131105	Johnny Odgaard.....	DK
2:24/0	Germany.....	49-2381-460077	Erich Janssen.....	GER
2:25/0	United Kingdom	44-992-448903	Noel Bradford	UK
2:26/0	Ireland.....	353-61-338228	John McKeon	IE
2:27/0	Luxembourg.....	352-42-0201	Luc Engelmann	L
2:28/0	Holland	31-30-720954	Hanno van.der.Maas	NL
2:29/0	Belgium.....	32-3-6587722	Staf Weyts.....	B
2:30/0	Switzerland	41-64-230319	Roland Gautschi.....	Aarau
2:31/0	Austria	43-1-8154871	Werner Illsinger	A
2:32/0	France	33-1-43074368	Attila Altan	F
2:33/0	Italy	39-971-57254	Giorgio Rutigliano.....	I
2:34/0	Spain	34-3-2105360	Efraim Bayarri	Bama
2:35/0	Bulgaria	359-52-259108	Daniel Kalchev	BG
2:36/0	Portugal	351-1-8520478	Jorge Rebelo.....	P
2:37/0	Hungary	36-56-72-189	Emo Petro	HUNGARY
2:38/0	AdriaNet.....	38-66-34986	Gregor Rudolf.....	SLO HR
2:39/0	Iceland	354-1-674376	Johann Sigurdsson	IS
2:40/0	Israel	972-52-914-618	Ido Ophir	IL
2:41/0	Greece.....	30-31-279858	Dimitris Hatzopoulos	Thessaloniki GR
2:42/0	CSFR.....	42-2-6911118	Petr Kocmid.....	CSFR
2:43/0	Turkiye-Net	90-1-2652119	Tolga Yurderi	TURKIYE
2:44/0	Georgia.....	7-8832-293581	Valeri Imnaishvili.....	GR
2:46/0	Ukraine Belarusia Moldova.....	7-0572-305216	Timur Tsyganko	Kharkov Ukraine
2:47/0	Lithuania	7-0127-730134	Zygimantas Cepaitis.....	LT
2:48/0	Poland	48-22-410374	Jan Stozek	PL
2:49/0	Estonia.....	7-0142-691872	Sulo Kallas	Tallinn Estonia
2:50/0	Russia.....	7-095-329-2192	Pete Kvitek	Moscow Russia

INTERNATIONAL FIDO NETWORK LIST OF ZONE AND REGIONAL COORDINATORS

NET/NODE	NETWORK	DATA PHONE	COORDINATOR	LOCATION
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ZONE 3 - OCEANIA

3:3/0	Oceania	61-2-428-4687	Trev Roydhouse	Trans-Tasman
3:50/0	AUSTRALIA	61-3-816-9439	Simon Walsh.....	MELBOURNE VIC AUSTRALIA
3:54/0	WESTERN PACIFIC	61-7-269-6355	Alwyn Smith.....	Sandgate Qld Australia
3:55/0	WEST AND NORTH AUSTRALIA	61-9-257-1309	Colin Wheat.....	Perth WA
3:57/0	NEW ZEALAND	64-3-383-1155	Tony Hall.....	Christchurch NZ

ZONE 4 - AMERICA LATINA

4:4/0	America Latina	52-3-621-9932	Gamey Garcia	Latin America
4:80/0	Rede Brazil	55-81-326-6159	Clovis Lacerda.....	Brazil
4:88/0	FidoNet-Chile	56-2-226-0029	Pedro Aguilera.....	Santiago-Chile
4:90/0	Red Provincias Unidas.....	54-1-839-9871	Billy Coen	Argentina
4:97/0	Red Mexico	52-83-56-4119	Arturo Garza	Mexico

ZONE 5 - AFRICA

5:5/0	AFRICA	27-41-342859	Henk Wolsink	Port Elizabeth RSA
5:70/0	BOTSWANA.....	267-373461	John Case	Gaborone
5:71/0	SOUTH AFRICA	27-41-342859	Henk Wolsink.....	Port Elizabeth
5:72/0	ZIMBABWE	263-4-728797	Phillip Nyahoda.....	Harare
5:73/0	KENYA	254-2-567043	Doug Rigby	Nairobi
5:75/0	ETHIOPIA	251-1-514412	Lishan Adam.....	Addis Ababa
5:76/0	ZAMBIA.....	260-1-252891	Mark Bennett	Lusaka
5:77/0	FRENCH-WEST-AFRICA	221-21-7627	Moussa Fall	Dakar Senegal

ZONE 6 - ASIA

6:6/0	ASIA	886-2-322-5113	Honlin Lue	Taipei TAIWAN
6:60/0	ASEAN Region	65-2410418	Wing Lee	SINGAPORE
6:61/0	HONG KONG AND MACAU	852-789-1267	Samson Luk.....	Kowloon HK
6:62/0	TAIWAN NET	886-2-718-8086	David Fann	Taipei TAIWAN
6:63/0	FidoNet-Japan	81-471-85-1088	Junsei Yamada	Tokyo JAPAN
6:64/0	PHILIPPINES.....	63-2-712-0329	Carlos Legaspi.....	Quezon City Philippines

INTERNATIONAL FIDO NETWORK LIST OF LOCAL NETWORK COORDINATORS

NET/NODE	NETWORK	DATA PHONE	COORDINATOR	LOCATION
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ZONE 1 - NORTH AMERICA

1:2604/0	North Jersey Somewhere	201-573-9262.....	Robert Hessler.....	Rivervale NJ
1:268/0	Pocono Net	201-729-1713.....	Ed Crissey	Sparta NJ
1:2605/0	Eastern NJ Fidonet	201-731-9425.....	Glen Johnson	West Orange NJ
1:2606/0	New Jersey Fidonet 2606	201-948-3428.....	Mike Brandt	NorthWest NJ
1:320/0	NET320 Coordinator	203-295-8384.....	Joseph Turner.....	Marlborough CT
1:142/0	Heart of CT	203-527-7870.....	Tim Carter	Hartford Area
1:327/0	EASTCONN-NET.....	203-564-8579.....	Lawrence Kolada.....	Plainfield CT
1:141/0	ConnCentral	203-663-1147.....	Steve Sekula	Killingworth CT
1:348/0	Manitoba Net.....	204-832-9603.....	Chris Davis	Winnipeg MB
1:3602/0	BhamNet	205-254-3344.....	Marlin Johnson	Birmingham AL
1:375/0	Central Alabama Net.....	205-279-7313.....	Tom Jones	Montgomery AL
1:3625/0	Gulf Coast Net	205-341-5055.....	Richard Wallen	Mobile AL
1:3607/0	North Alabama Net	205-355-2983.....	Jeffrey Fuller.....	Decatur AL
1:373/0	Rocket City Net.....	205-880-7723.....	John Emmert	Huntsville AL
1:3401/0	NW Washington State.....	206-336-2339.....	Greg Martz.....	Mt. Vernon WA
1:352/0	Olympia WA Net.....	206-456-6073.....	Rick Castle	Olympia WA
1:138/0	TacoNet.....	206-584-7895.....	Jim Smith.....	Tacoma WA
1:343/0	Lesser Seattle Opera	206-637-2398.....	LeRoy DeVries.....	Seattle WA
1:350/0	Kitsap Peninsula Gateway	206-698-1044.....	Jim Barth	Silverdale WA
1:326/0	MAINE NET	207-363-6584.....	Wayne Price	York ME
1:328/0	Eastern Maine Net	207-945-9346.....	Mark Goodwin	Bangor ME
1:347/0	CNW NET The Last Frontier.....	208-375-2049.....	Bill Parrott	Boise Id
1:205/0	Fresno/Central Valley.....	209-434-4215.....	Sam Wecter	Fresno CA
1:208/0	Stockton/Modesto Net.....	209-551-2258.....	Stephen Edgar.....	Modesto CA
1:214/0	Visalia Net	209-734-9412.....	Tony Ermie.....	Visalia CA
1:102/0	SoCalNet.....	213-874-9484.....	Richard Martz	Los Angeles CA
1:124/0	The Silver Shield.....	214-436-8753.....	Tracy Perry	Lewisville TX
1:2607/0	Bethlehem-Easton-Allentown-Reading Net.....	215-258-0565.....	Ken Maskall	BEAR PA
1:273/0	Philadelphia Metro	215-725-9134.....	Michael Walsh	Philadelphia PA
1:157/0	Northeast OH	216-273-1340.....	Bob Abbott.....	Cleveland OH
1:237/0	State Line OH/PA	216-544-4022.....	Orren Zook	Niles OH
1:233/0	Chambana Net.....	217-384-4311.....	Wayne Hamilton	Urbana IL
1:227/0	Michiana Net.....	219-287-4326.....	Bob Heide.....	South Bend IN
1:230/0	Net 230 Coordinator.....	219-464-0411.....	Michael Yadron.....	Northwest IN
1:236/0	North Eastern IN	219-925-5524.....	Donn Bly	Auburn IN
1:109/0	National Capitol MegaNet	301-590-3994.....	Joe Keenan	Washington DC
1:2612/0	Southern MD 109 Spinoff.....	301-737-1786.....	John Clawson	Lexington Park MD
1:2600/0	Central Lower DE.....	302-678-0141.....	Jay Benton.....	Dover De
1:150/0	First State Net.....	302-994-3772.....	Edward DelGrosso	Newark DE
1:306/0	Northern CO.....	303-229-9719.....	Rob Diehl	Ft. Collins CO
1:104/0	Denver Area Net	303-665-8227.....	Jim Burt	Boulder CO
1:277/0	277 NC	304-292-6552.....	Micheal Smyth	Morgantown WV
1:262/0	West Virginia Statewide Net	304-756-3811.....	Scott Hill	Alum Creek WV
1:279/0	WV NET	304-766-7807.....	Tom Freeman	Dunbar WV
1:135/0	South Florida Net	305-595-8833.....	Scott Samet.....	Miami Area & Florida Keys
1:369/0	Treasure Coast Net.....	305-987-7873.....	John Carrara.....	Pembroke Pines
1:140/0	Sask Net	306-382-5746.....	Ken Read	Saskatchewan Canada
1:303/0	COWBOY NET	307-472-3615.....	Thomas Lange.....	Casper WY
1:310/0	CHEYENNE CHAOS	307-638-8506.....	Jim Taylor	Cheyenne WY
1:232/0	Central IL	309-674-0905.....	Lee Busby.....	Peoria IL
1:2380/0	Monroe County Net.....	313-289-2659.....	Rob O'Dell	Monroe MI
1:2202/0	Bluewater Net	313-364-5119.....	Chris Brinker	Marysville MI
1:120/0	Detroit MetroNet.....	313-542-9615.....	Mike Bader	Ferdale MI
1:2200/0	Southeastern Michigan Net.....	313-665-5927.....	Tom Winters.....	Ann Arbor MI
1:2240/0	FlintNet.....	313-743-8464.....	George Hatchew.....	Flint MI
1:234/0	Maumee Valley Net.....	313-854-5600.....	Russell Jasmund	Temperance MI
1:289/0	Mid Missouri Net	314-581-6717.....	Linda Glover	Mexico MO

INTERNATIONAL FIDO NETWORK LIST OF LOCAL NETWORK COORDINATORS

NET/NODE	NETWORK	DATA PHONE	COORDINATOR	LOCATION
1:287/0	Cape Girardeau	314-651-3340.....	David Hartis	Cape Girardeau MO
1:296/0	SEMO-Poplar Bluff Area	314-686-6174.....	William Mallett	Poplar Bluff MO
1:100/0	St Louis Area	314-843-0001.....	J Harre	St Louis MO
1:2609/0	StickNet New York	315-336-8426.....	Rob Koziomkowski	Rome NY
1:2608/0	Upstate NY NET	315-492-8534.....	Bill Sutliff	Syracuse NY
1:291/0	Wichita MetNet.....	316-263-5313.....	John McDowell	Wichita KS
1:231/0	Indiana Best NET	317-535-9097.....	Brian Murrey	New Whiteland IN
1:201/0	Lafayette Net.....	317-742-5533.....	Steve Michaels	West Lafayette IN
1:3803/0	Lafayette Area	318-235-3207.....	John Cuccia	Lafayette LA
1:3817/0	Central Louisiana Net	318-239-0834.....	Terry Partigianoni.....	Leesville La
1:3807/0	SoWeLa Net.....	318-436-2992.....	Gordon K	Lake Charles LA
1:380/0	S'port/Bossier City	318-797-8310.....	Paul Browning	La
1:283/0	IowaNetEast.....	319-337-9878.....	John Johnson	Iowa City IA
1:323/0	Southern New England Net	401-397-7522.....	Stan Weyman	Coventry RI
1:285/0	Omaha Ne Vicinity Net.....	402-593-2016.....	Dave Miller.....	Papillion NE
1:134/0	Southern Alberta	403-293-5129.....	Norbert Lange.....	Calgary Alta
1:358/0	Southern Alberta WindNet	403-381-8674.....	Les Campbell.....	Lethbridge Alta
1:342/0	Central Alberta	403-424-3258.....	Tom Hall.....	Edmonton Alta
1:3402/0	MooseNet Hub HST.....	403-743-9330.....	Bruce Anderson	Ft McMurray AB
1:3616/0	Gainesville GA Net.....	404-532-1978.....	Ed Ivey.....	Gainesville GA
1:133/0	ATLnet.....	404-578-1691.....	Jay Lovell.....	Atlanta GA
1:147/0	OKC MetroNet	405-359-8519.....	Will Crain	Edmond OK
1:385/0	SW Oklahoma	405-536-8616.....	Roy Howard.....	Lawton OK
1:3814/0	Stillwater Area	405-624-6347.....	Jim Dugger	Stillwater OK
1:3810/0	Ponca City Net.....	405-765-0951.....	Wayne Majors.....	Ponca City OK
1:3400/0	Montana Net	406-423-5433.....	Cynthia Denton.....	Hobson MT
1:363/0	Orlando Data Information Network	407-438-7093.....	Al Hays	Orlando FL
1:3638/0	Gold Coast Net	407-496-2790.....	Michael Robert	Delray Beach FL
1:3618/0	CENTRAL Florida NET	407-574-9246.....	Tom Hirtreiter.....	Deltona FL
1:374/0	Space Coast Net.....	407-639-1992.....	Ken Tuley	Rockledge FL
1:3646/0	Treasure Net.....	407-743-1112.....	John Skakandy	Palm Beach Gardens FL
1:3609/0	Gator Net	407-798-2972.....	Charlie Hein	Loxahatchee FL
1:3633/0	Gateway to the Worlds.....	407-847-5499.....	Mike Sylvestre	Kissimmee FL
1:143/0	Silicon Valley.....	408-298-2740.....	Todd Looney	San Jose CA
1:216/0	Monterey Bay Net.....	408-338-6860.....	Jim Cannell.....	Boulder Creek CA
1:3812/0	Brazoria County Net.....	409-265-5958.....	Bob Henderson.....	Richwood TX
1:3811/0	S.E.TEXNET.....	409-724-1037.....	Jimmy Miller	Nederland TX
1:117/0	Brazos County Area.....	409-764-0056.....	Paul Sittler	College Station TX
1:386/0	The Party Net.....	409-945-8315.....	Calvin Jennings	Texas City TX
1:261/0	Chesapeake MetroNet.....	410-833-8933.....	Bob Rudolph.....	Baltimore Area
1:2601/0	Northwest Penn	412-346-5535.....	Charles Ring	Sharon PA
1:2610/0	Southwest-Penn Net	412-832-8185.....	Michael Scott.....	Greensburg PA
1:129/0	Pitt-Net #1 City	412-856-1428.....	Paul Kelly.....	Pittsburgh PA
1:321/0	MassNet West.....	413-256-1037.....	Morton Sternheim	Amherst MA
1:154/0	SE Wisconsin LATA	414-251-2580.....	Bob R.....	Menomonee Falls WI
1:139/0	N.E. WI & U.P. MI.....	414-725-7598.....	Bruce Casner.....	Neenah WI
1:204/0	SF Peninsula Net.....	415-572-9563.....	Les Kooyman.....	San Mateo CA
1:125/0	SF Bay Net.....	415-621-0567.....	William Sommers.....	San Francisco CA
1:250/0	Metro Toronto Net	416-225-2315.....	Al Payne	Toronto ON
1:259/0	Halton/Peel Network	416-542-8174.....	Bryan Fedorowski.....	Mississauga ON
1:229/0	Durham Net.....	416-579-6302.....	Rick Johnston	Oshawa Ontario
1:247/0	Niagara Thunder Net	416-935-6628.....	John Giesbrecht	St.Catharines ON
1:244/0	Steel City Net.....	416-945-4705.....	Glen Hawley	Hamilton Area ON
1:286/0	Ozark Net.....	417-673-2283.....	Tim Pearson	Joplin MO
1:284/0	Springfield Area Net.....	417-886-2563.....	Eddie Seasholtz.....	Springfield MO
1:240/0	QUEBEC EAST	418-648-9590.....	Andre Morin	Quebec QC
1:399/0	Central Arkansas Net.....	501-336-0729.....	Gerald Hogue	Conway AR
1:391/0	NoWe ARK Net.....	501-750-3284.....	J Parson	NorthWest AR
1:3809/0	ARK NET	501-862-0564.....	Chuck Simons	El Dorado AR
1:389/0	East Arkansas Net	501-932-6961.....	Jon Wagner	Bono AR

INTERNATIONAL FIDO NETWORK

LIST OF LOCAL NETWORK COORDINATORS

NET/NODE	NETWORK	DATA PHONE	COORDINATOR	LOCATION
1:2320/0	Derby City Net.....	502-964-7827.....	Scott Goldbach.....	Louisville KY Southern IN
1:105/0	VanPort Net.....	503-297-9145.....	The Cumudgeon.....	South WA & North OR
1:152/0	The Oregon Network.....	503-747-7636.....	George Butts.....	Springfield OR
1:349/0	SoNet.....	503-846-7170.....	Jonathan Talon.....	Southern Oregon
1:356/0	(9pm-9am PST) Oregon Coast Net.....	503-888-5222.....	Lewis Cosper.....	Charleston OR
1:357/0	Mid-Willamette Valley Net.....	503-928-9535.....	Khile Klock.....	Albany OR
1:3800/0	Baton Rouge Area.....	504-273-3116.....	Stan Brohn.....	Baton Rouge LA
1:394/0	Hammond Area Users Group.....	504-386-8827.....	S. Williams.....	Ponchatoula LA
1:390/0	Southeast Louisiana Net.....	504-641-4789.....	Glen Strecker.....	Slidell LA
1:384/0	South Louisiana.....	504-868-1440.....	Raymond Barnes.....	Houma LA
1:396/0	New Orleans Area.....	504-888-6515.....	John Woodward.....	New Orleans LA
1:308/0	The Tularosa Basin Net.....	505-437-8267.....	Chuck Haynes.....	Alamogordo NM
1:305/0	Whole Enchilada Net.....	505-526-1221.....	Scott Hoffman.....	Las Cruces NM
1:313/0	Southeastern New Mexico Net.....	505-625-5795.....	George Lee.....	Roswell NM
1:301/0	Central New Mexico Net.....	505-865-8385.....	N.L. Hargrove.....	Los Lunas NM
1:255/0	Atlantic Canada.....	506-635-1964.....	Bill Walton.....	NB NS NF PI
1:292/0	South Minnesota Net.....	507-281-8292.....	Rob Richter.....	Rochester MN
1:322/0	MassNet Central.....	508-481-7147.....	Kevin Porter.....	Marlborough MA
1:324/0	MassNet NE.....	508-774-0751.....	Bob DeAlmeida.....	Danvers MA
1:346/0	WA Inland Empire.....	509-276-6431.....	Susan Waters.....	Deer Park WA
1:344/0	The CENTRAL Washington State Net.....	509-664-4024.....	Dan Hartmann.....	East Wenatchee WA
1:161/0	SF EAST BAY.....	510-426-0470.....	Bill McCauley.....	Pleasanton CA
1:215/0	East Alameda County Net.....	510-881-7678.....	John Nobriga.....	Castro Valley CA
1:382/0	GerbilNet.....	512-335-7949.....	Michael Masterson.....	Lake Travis TX
1:397/0	Tip-O-Tex/Valley Net.....	512-383-9898.....	Michael Skurka.....	Edinburg TX
1:3802/0	Crossroads Net.....	512-575-0667.....	Rob Levin.....	Victoria TX
1:387/0	San Antonio.....	512-924-8179.....	Lloyd Kirkpatrick.....	San Antonio TX
1:160/0	South TX Gulf Coast.....	512-994-9643.....	Tom Harper.....	Corpus Christi TX
1:110/0	DAYTON Area.....	513-439-9217.....	Decker Doggett.....	Dayton OH
1:167/0	Quest Quebec West.....	514-364-2937.....	Steve Monteith.....	Lasalle PQ
1:242/0	QUEBEC LAURENTIDES.....	514-438-8024.....	Alain Ross.....	St-Jerome PQ
1:290/0	CIA Central Iowa Net.....	515-285-1190.....	Jim Louvau.....	Des Moines IA
1:159/0	Mid Michigan Net.....	517-655-3347.....	Mike Huntzinger.....	Lansing MI
1:239/0	Altam 8.....	517-686-0681.....	Bill Carney.....	Kawkawlin MI
1:2330/0	Jackson Area FidoNet.....	517-789-7556.....	Tony Bengel.....	Jackson MI
1:267/0	Adirondack Net.....	518-761-0869.....	Brian Dunworth.....	Glens Falls NY
1:246/0	Great Lakes Central.....	519-250-8414.....	Bryan Hochberg.....	Windsor ON
1:245/0	Tobacco Net.....	519-428-9287.....	Peter J Ptok.....	Simcoe ON
1:221/0	South West Ontario.....	519-653-7677.....	Royce Jones.....	Cambridge ON
1:3604/0	MS Gulf Coast Net.....	601-467-0801.....	Billie Cohen.....	Bay St Louis Ms
1:361/0	Central Mississippi.....	601-636-1119.....	Judy Proctor.....	Vicksburg MS
1:3632/0	Jackson Metro.....	601-992-9459.....	Ray Leninger.....	Jackson MS
1:114/0	Phoenix Area.....	602-242-3158.....	Bob Donaldson.....	Phoenix AZ
1:309/0	The Southern Arizona Net.....	602-458-8342.....	Robin Moore.....	Sierra Vista AZ
1:314/0	Hualapai Mountain Net.....	602-692-7839.....	Sjolseth Rudzinski.....	Kingman AZ
1:304/0	N Arizona FIDO.....	602-779-3265.....	Ron Moore.....	Flagstaff AZ
1:300/0	Pueblo NET.....	602-881-3769.....	Jerry Cain.....	Tucson Az
1:132/0	New England-North.....	603-641-2017.....	Paul Roemer.....	Manchester NH
1:153/0	Pacific Rim.....	604-266-7754.....	Dallas Hinton.....	GVRD (Vancouver BC)
1:340/0	Canada West Net.....	604-595-4407.....	Alex Stuart.....	Victoria BC
1:359/0	North/Central BC.....	604-747-3741.....	Ken Lewis.....	Quesnel BC
1:351/0	Central & N. Vancouver Is.....	604-753-1145.....	Herb Addison.....	Nanaimo BC
1:353/0	Southern Interior Net.....	604-764-4672.....	Bob Shiells.....	Kelowna BC
1:288/0	Dakotas' Net.....	605-336-3578.....	Rory Binkerd.....	Sioux Falls SD
1:293/0	Western Dakota Net.....	605-348-4113.....	Steve Fuqua.....	Rapid City SD
1:2370/0	Lexington Area.....	606-271-0558.....	Doug Rogers.....	Lexington KY
1:108/0	CincyNet.....	606-727-3638.....	Rick Ashworth.....	Cincinnati OH
1:121/0	Madison Area.....	608-256-5697.....	Ed Almasy.....	Madison WI
1:2360/0	Western Wisconsin Net.....	608-788-8086.....	Rudy Arlt.....	La Crosse WI
1:266/0	51st State.....	609-482-8604.....	Barry Geller.....	Maple Shade NJ

INTERNATIONAL FIDO NETWORK

LIST OF LOCAL NETWORK COORDINATORS

NET/NODE	NETWORK	DATA PHONE	COORDINATOR	LOCATION
1:282/0	Twin Cities Metronet	612-938-1875.....	Steve Sherwick.....	Mpls/St. Paul MN
1:163/0	Canada's Capital.....	613-446-6234.....	Jim Brown.....	Ottawa ON
1:249/0	Lake Ontario Net CANADA.....	613-548-3691.....	Don Laverdure.....	Kingston ON
1:241/0	Upper Ottawa Valley Net.....	613-735-7916.....	David Storey.....	Pembroke ON
1:243/0	The Razor's Edge.....	613-829-0282.....	andrew farmer.....	Nepean ON
1:248/0	St. Lawrence Seaway Net.....	613-938-5498.....	Dean Laviolette.....	Cornwall ON
1:2350/0	SoCenOhioNet.....	614-333-0703.....	Rick Morris.....	Washington Court House Oh
1:226/0	Buckeye-Net	614-457-1701.....	David Pointer.....	Columbus OH
1:2220/0	Chilli-Net	614-772-5520.....	Keith Wineka	Chillicothe Oh
1:2260/0	Ohio River Net	614-776-7136.....	Alan Graff	Wheelersburg OH
1:3642/0	Upper East Tennessee Net.....	615-245-1364.....	Joe Byrd	Kingsport TN
1:362/0	Chatta-NET METRO.....	615-265-2629.....	John Finney.....	Chattanooga TN
1:116/0	Middle Tennessee Area	615-297-5611.....	Turner Hutchison.....	Nashville TN
1:3635/0	Western Tennessee Area.....	615-441-3116.....	Bob Payne.....	Dickson TN
1:3643/0	Rural SE Tennessee Net.....	615-442-2833.....	Jeff Cook	Madisonville TN
1:3615/0	TN Valley Net.....	615-453-0780.....	Kent Ogle.....	Pigeon Forge TN
1:3637/0	Cumberland TN Area.....	615-526-3347.....	Dean Carothers.....	Cookeville TN
1:3622/0	Mountain Empire NET.....	615-878-2286.....	Larry Hayes.....	Bristol TN
1:2201/0	Greater Kalamazoo Net.....	616-327-2144.....	Martin Gantzer.....	Portage MI
1:228/0	Metro Grand Rapids Net.....	616-363-7360.....	Kevin Omalley.....	Grand Rapids MI
1:2340/0	S.W. Michigan Net	616-468-5026.....	Tim Akright	Coloma MI
1:2390/0	Greenville Net	616-754-6180.....	Harry Moyles	Greenville MI
1:101/0	Boston Metro.....	617-595-5626.....	HAL DuPrie.....	Swampscott MA
1:2250/0	East of St Louis.....	618-233-1659.....	Peter Cervasio.....	Belleville IL
1:2222/0	Southern Illinois	618-549-1129.....	Mike Harrell	Carbondale IL
1:2290/0	So. Illinois Net.....	618-596-4391.....	Jeff Rice.....	Mulkeytown IL
1:202/0	San Diego Co CA.....	619-278-7086.....	Brenda Donovan.....	San Diego CA
1:213/0	Northern Nevada.....	702-322-6555.....	Lance P Taylor-Warren.....	Reno NV
1:209/0	Vegas Net	702-731-9453.....	John Le Duc	Las Vegas NV
1:274/0	CENTRAL VA NET	703-373-9289.....	John Schreiber	Falmouth Va
1:265/0	SOUTHERN NORTHERN VA NET.....	703-494-1822.....	Ray Gwinn.....	Woodbridge Va
1:2602/0	SouthWestern Virginia Net.....	703-951-3282.....	Fred Homan.....	Blacksburg VA
1:379/0	NC WEST NET	704-544-0010.....	Carl Neal.....	Charlotte NC
1:252/0	Georgian Bay Net	705-429-6036.....	John Schut.....	Wasaga Beach ON
1:225/0	Near North Net.....	705-495-3453.....	Lionel Seib.....	North Bay ON
1:224/0	The Slag Net.....	705-693-1292.....	Richard Dewolfe.....	Sudbury ON
1:222/0	Soo Net NC.....	705-949-6521.....	Jason Tackaberry.....	Sault Ste. Marie ON
1:370/0	NE Georgia Network.....	706-208-9859.....	Tim Wool.....	Athens GA
1:3613/0	West Central Ga & East Central Al Net	706-322-4236.....	Archie Caldwell.....	Columbus Ga
1:115/0	Chicagoland	708-657-1113.....	Steve Levinthal.....	Glenview IL
1:106/0	Houston Area	713-978-3573.....	Justin Marquez.....	Houston TX
1:207/0	Inland Empire NET.....	714-381-6013.....	Rod Bowman.....	Colton CA
1:103/0	Orange Co CA	714-638-2298.....	Jim Ward	Garden Grove CA
1:238/0	Central WI.....	715-539-2950.....	William Sloggy.....	Merrill WI
1:2300/0	West WI Net.....	715-723-3552.....	Chris Anderson.....	Chippewa Falls WI
1:260/0	United EmpireStateNet.....	716-442-8144.....	Phillip Dampier.....	Rochester NY
1:270/0	Central PA Net	717-944-0655.....	Gary Rux	Middletown PA
1:2603/0	Free New York Net.....	718-853-8957.....	E. Deringer	Brooklyn NY
1:278/0	NYCNet.....	718-859-1774.....	Howie Ducat	New York City NY
1:307/0	SE Colo Net	719-269-9261.....	Richard Cochran.....	Canon City Co
1:128/0	Pikes Peak Net	719-574-3304.....	Wood/Sanders.....	Colorado Springs CO
1:312/0	Utah County NET	801-221-1609.....	Dave Harris.....	Orem UT
1:311/0	Salt Lake NET.....	801-262-3822.....	Bob Briggs.....	Salt Lake UT
1:302/0	CACHE VALLEY NET.....	801-563-6348.....	Stewart Hunsaker.....	Smithfield UT
1:325/0	Surprising Vermont	802-985-8802.....	J Antram	Shelburne Vermont
1:3639/0	Upstate SC.....	803-271-1092.....	John Nettles.....	Greenville SC
1:360/0	Augusta Net	803-279-4124.....	Ed Meloan	North Augusta SC
1:3651/0	Darlington NET	803-393-0239.....	Steve Stevens.....	Darlington SC
1:3631/0	Greenwood Net.....	803-456-2982.....	David Dean.....	Greenwood SC
1:3647/0	Sumter Net.....	803-499-4316.....	Gale Wilkinson.....	Sumter SC

INTERNATIONAL FIDO NETWORK LIST OF LOCAL NETWORK COORDINATORS

NET/NODE	NETWORK	DATA PHONE	COORDINATOR	LOCATION
1:3650/0	The Beaufort Network	803-522-3303.....	Bruce Parker.....	Beaufort SC
1:372/0	Charleston Net.....	803-556-8213.....	Yvonne Rea.....	Charleston SC
1:3624/0	Aiken Net	803-649-4171.....	Ed Ridpath.....	Aiken SC
1:3627/0	Myrtle Beach Net	803-650-9022.....	Walt Mayo.....	Myrtle Beach SC
1:376/0	Cola Net.....	803-731-2510.....	Ron Pritchett.....	Columbia SC
1:275/0	SouthEast Virginia Net.....	804-496-3320.....	Warren King.....	Virginia Beach VA
1:276/0	Lynchburg Area Network	804-525-4126.....	Brian Hudson.....	Lynchburg VA
1:271/0	Tidewater VA Net.....	804-591-8537.....	Dennis Ricketts.....	Newport News VA
1:2611/0	Hampton VA Net	804-723-4470.....	Bill Sellers.....	Hampton VA
1:264/0	Mid Virginia Net.....	804-747-8895.....	Bill Fisch.....	Richmond VA
1:210/0	Inter-Comm BBS.....	805-322-8800.....	Steve Garcia.....	Bakersfield Ca
1:206/0	Ventura County Net.....	805-488-8973.....	Phil Hoppe.....	Oxnard CA
1:3816/0	Top O' Texas Net.....	806-374-2435.....	Kevin Murie.....	Amarillo TX
1:3804/0	Lubbock Net.....	806-745-0114.....	Kevin Elam.....	Lubbock TX
1:345/0	Pacific Region Fido.....	808-247-7328.....	Ron Skates.....	Honolulu HI
1:367/0	Puerto Rico Net.....	809-783-9542.....	Luis Salazar.....	San Juan PR
1:2230/0	Southwest Indiana Net.....	812-442-5354.....	George Bowles.....	Brazil IN
1:377/0	Tampa Bay Net	813-265-3256.....	Wes Cowley.....	Tampa FL
1:137/0	Fla Suncoast Net	813-377-1470.....	George Emigh.....	Sarasota FL
1:3630/0	On The Gulf	813-455-6390.....	Glenn Niesen.....	Naples FL
1:371/0	SW Florida Coast Net	813-693-8095.....	Mark Mantei.....	Fort Myers FL
1:3603/0	PinellasNET	813-796-2486.....	Neil Lauritsen.....	Clearwater FL
1:3619/0	West Pasco Net.....	813-862-8850.....	Ralph LoBianco.....	Port Richey FL
1:2270/0	Freeport Net.....	815-233-5008.....	geoffrey boother.....	Freeport IL
1:2210/0	Rockford Area.....	815-633-1558.....	Mike Dunaway.....	Machesney Park IL
1:294/0	The Midland Empire Net.....	816-233-1357.....	Michael Fuson.....	St Joseph MO
1:280/0	KC Area Net.....	816-763-2181.....	Mike Reardon.....	Kansas City MO
1:130/0	The CowTown Net.....	817-444-0155.....	CR Hamilton.....	Azle TX
1:393/0	TX TriAngle.....	817-497-6325.....	Art Geary.....	Corinth TX
1:395/0	Central Killeen Area	817-526-2941.....	Bill Brooks.....	Killeen TX
1:3818/0	Granbury Area	817-573-0156.....	Michael Twiselton.....	Granbury TX
1:388/0	HOT NET Waco.....	817-666-5137.....	Bob Brown.....	Waco TX
1:3805/0	Wichita Falls Area.....	817-696-5771.....	Robert Lennard.....	Wichita Falls TX
1:257/0	Eastern Township Net.....	819-822-4312.....	Daniel Gougard.....	Sherbrooke QC
1:123/0	Mid-South Net.....	901-767-2503.....	Bill Paul.....	Memphis TN
1:3801/0	East Texas Net.....	903-534-1918.....	Bill Roper.....	Tyler TX
1:398/0	Piney Woods Net	903-643-7607.....	Marty Duplissey.....	Longview TX
1:3819/0	Texarkana Net.....	903-838-6713.....	Mike Dumdel.....	Texarkana TX
1:365/0	North Central Fla Net.....	904-368-6945.....	Eric Carr.....	Ocala FL
1:3601/0	Florida Gator Net	904-377-2082.....	David Rockey.....	Gainesville FL
1:3605/0	Tally-Net.....	904-385-6877.....	Gregory Wynot.....	Tallahassee FL
1:112/0	NE Florida Coast.....	904-396-4931.....	Charlie Deskin.....	Jacksonville FL
1:3600/0	Tie Line Net.....	904-431-1913.....	Bill Mathews.....	Raiford FL
1:3612/0	PensaNET [HST/DS]	904-494-9731.....	Lee Herron.....	Pensacola FL
1:3649/0	Putnam County Net.....	904-659-2834.....	David Rye.....	Grandin FL
1:3623/0	Daytona Net.....	904-673-2010.....	Gard Brown.....	Ormond Beach FL
1:3620/0	Cat's Meow	904-794-1591.....	Stanton Hershman.....	St. Augustine FL
1:366/0	NW Florida.....	904-863-8408.....	Roger Smith.....	Ft. Walton Beach FL
1:3608/0	Panama City Net.....	904-871-6536.....	James Young.....	Panama City FL
1:2280/0	SuperiorLand Net.....	906-486-6836.....	Bruce Ruona.....	Ishpeming MI
1:355/0	Alaska Midnight Sun Net.....	907-452-1460.....	P Stern.....	Fairbanks AK
1:107/0	MetroNet of New Jersey & Long Island	908-247-8252.....	Fabian Gordon.....	East Brunswick NJ
1:3645/0	SCntrl Georgia Net.....	912-247-6977.....	Andy Smith.....	Valdosta GA
1:3640/0	SE Georgia Net.....	912-882-0755.....	Karen Maynor.....	St Marys Ga
1:3617/0	Albany Net	912-883-1421.....	Joe Recker.....	Albany GA
1:3611/0	Mid Ga Net.....	912-923-2065.....	John Sherman.....	Warner Robins GA
1:3626/0	The Savannah Network	912-927-6012.....	Mark Silcox.....	Savannah Ga
1:281/0	Topeka Area Net.....	913-271-2071.....	Mike Ortiz.....	Topeka KS
1:295/0	Saline County Net.....	913-827-3733.....	Chris Hallock.....	Salina KS
1:272/0	South East NY Net.....	914-667-9385.....	Joe Brown.....	Mount Vernon NY

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NET/NODE	NETWORK	DATA PHONE	COORDINATOR	LOCATION
1:3808/0	Midessa Net	915-570-1702.....	Bob Bell	Midland Tx
1:383/0	San Angelo Net.....	915-653-4174.....	Dan Lee	San Angelo TX
1:392/0	Big Country Net.....	915-691-9755.....	Mike Vaughn.....	Abilene Tx
1:381/0	West Texas Net.....	915-821-3638.....	Rick Petersen	El Paso TX
1:203/0	SacraMetro Valley Net	916-338-5227.....	Mark Stennett	Sacramento CA
1:211/0	The Foothill's 49er Net.....	916-432-3179.....	Dennis Diaz	Grass Valley CA
1:119/0	ChicoNet	916-891-1920.....	Michael Favor	Chico CA
1:170/0	Tulsa Area.....	918-254-6618.....	Bruce Bodger.....	Tulsa OK
1:3815/0	Bartlesville Area	918-333-6905.....	Ted Pugh	Bartlesville OK
1:3813/0	Muskogee Area.....	918-682-7337.....	Lloyd Hatley.....	Muskogee OK
1:3644/0	Alamance Net	919-226-6984.....	Chris Laforet.....	Graham NC
1:3636/0	The Sandhills Net.....	919-245-4648.....	William Spearman	Cameron NC
1:3628/0	Coastal Carolina Net.....	919-256-6588.....	Kip McDonald.....	Wrightsville Bch NC
1:151/0	NC Net	919-333-2163.....	David Bodman	Greensboro NC
1:3641/0	Durham Net.....	919-383-4905.....	Tom Faulkner.....	Durham NC
1:3634/0	Fayetteville Net	919-436-2055.....	Frank Koza	Fayetteville NC
1:3614/0	Jacksonville NC Net.....	919-455-1933.....	Phil Ferraro.....	Jacksonville NC
1:3629/0	New Bern Net.....	919-637-3583.....	Donnie Benners.....	New Bern NC
1:3648/0	Central Carolina Net	919-672-3105.....	Rocky Hurley	Asheboro NC

ZONE 2 - EUROPE

2:410/0	GreekNet.....	30-1-8215165.....	Alex Colybadis.....	Athens GR
2:285/0	Host Holland South-West.....	31-1150-18742.....	Peter Smink	Terneuzen Holland
2:286/0	Dutch Independent Network	31-1749-44958.....	Ben de Goey.....	Monster Holland
2:280/0	DFF Host Holland Capital & TipTop Gateway	31-20-6751585.....	Max Keizer.....	Amsterdam NL
2:284/0	DFF Holland South-East.....	31-4187-1523.....	Patrick Maartense.....	Poederloijen
2:512/0	PCM Net	31-4780-88119.....	Joop Mellaart	Venray Netherlands
2:283/0	Host Holland Mid/East Net 283.....	31-53-340807.....	Eric Lotgerink.....	Enschede Holland
2:282/0	Host Holland North-East	31-5910-34029.....	Rick Kelly	Emmen NL
2:281/0	DFF Holland North-West.....	31-71-613263.....	Eelco De.graaff	Voorschoten Holland
2:500/0	HCC net	31-8380-37156.....	Henk Wevers	Ede
2:291/0	North West Belgium	32-2-5826650.....	Kris Carlier.....	Lennik B
2:292/0	North-East Belgium.....	32-3-3660159.....	Karel Peeters.....	Antwerp Belgium
2:293/0	South Belgium.....	32-81-411842.....	Dionysius Vander.Roost	Lustin Belgium
2:320/0	Net Paris NC	33-1-43074368.....	Attila Altan	Paris
2:322/0	Net Nord NC	33-20392225.....	Edmond Vandermeersch	Wervicq-Sud
2:321/0	Net Centre.....	33-47280318.....	Bernard Salle	St Avertin
2:324/0	Sud-Ouest.....	33-61630861.....	Marc Neiger	Toulouse
2:323/0	Net Sud-Est.....	33-78219665.....	Georges Boume	Mions
2:325/0	Net Est NC.....	33-84268606.....	Mathieu Chappuis.....	Belfort
2:326/0	Net Ouest NC.....	33-97271410.....	Sebastien Le Gallic.....	Saint-Barthelemy
2:341/0	Castilla Centro	34-1-3207878.....	Jose.Miguel Rodriguez	Madrid
2:340/0	Islands Net	34-28-230934.....	Miguel Julia.....	Spain
2:343/0	Xarxa Catalana	34-3-3296590.....	Tirs Abril.....	Catalunya
2:344/0	Norte Verde Net	34-4-447-9012	Eduardo Jacob	Spain
2:345/0	Andalucia	34-5-4163114.....	Juan Ignacio Rodriguez	Spain
2:346/0	Llevant Net.....	34-6-666-1325	orlando castillo.....	Elx A
2:348/0	Galicia Net	34-82-404203.....	Manuel Fuentes.....	Spain
2:362/0	Centro	351-1-7935839.....	Jose Camara	P
2:361/0	Norte	351-34-313554.....	Fausto Carvalho	P
2:270/0	Luxembourg Net	352-45-0173.....	Andre Weiland	Merl
2:263/0	Remote Access.....	353-1-325480.....	Greg Coyle	Dublin Ireland
2:391/0	Area 91	354-1-674376.....	Johann Sigurdsson.....	Reykjavik IS
2:220/0	Helsinki Area.....	358-0-4551098.....	Hannu Strang	Espoo Finland
2:221/0	Southern Finland Network	358-18-522316.....	Sami Goos.....	Lahti
2:222/0	West Finland's Net.....	358-21-404036.....	Kim Heino	Turku Finland
2:227/0	Eastern Finland Net	358-55-178749.....	Pasi Partanen.....	Mikkeli
2:228/0	Northern Finland	358-83-410041.....	Toni Mykkanen.....	Ylivieska
2:359/0	East Net	359-52-259108.....	Daniel Kalchev.....	Varna Bulgaria

INTERNATIONAL FIDO NETWORK LIST OF LOCAL NETWORK COORDINATORS

NET/NODE	NETWORK	DATA PHONE	COORDINATOR	LOCATION
2:371/0	Budapest NET.....	36-1-118-7950.....	Sandor Jeszenszky	Budapest HUN
2:372/0	West Hungary NET.....	36-22-18-039	Bela Mucs.....	Szekesfehervar HUN
2:370/0	Tisza NET	36-56-72-189	Emo Petro	Szolnok HUN
2:381/0	Croatia	38-58-320444.....	Zdravko Blagdan	HR
2:380/0	Slovenia	38-66-34986.....	Gregor Rudolf	SLO
2:334/0	North-West Italy	39-11-3299706.....	Franco Schinco.....	Torino
2:331/0	Alberto Network	39-331-772362.....	Angelo Besani	Italy
2:333/0	Fri-Ve-Net.....	39-434-32020.....	Adolfo Melilli	Italy
2:332/0	Italy88 Telnet.....	39-574-433345.....	Franco Mulato.....	Prato FI Italy
2:335/0	Italia Centro Sud	39-766-540899.....	Stefano Pasquini	Italy
2:301/0	United Swiss Fido-Networks	41-71-725188.....	Urban Oettli	Switzerland
2:423/0	Czech NET.....	42-184-3893.....	Jaromir Zachata.....	Tachov CSFR
2:424/0	Easy Connection Network.....	42-2-802908.....	Vojta Kment	CSFR Prague
2:420/0	Prague NET	42-2-843174.....	Jakub Vanek	Prague CSFR
2:421/0	Morava NET.....	42-5-24707.....	Franta Cimmer	Bmo CSFR
2:422/0	Slovak NET	42-7-711446.....	Nada Kochmanova.....	Bratislava CSFR
2:310/0	ViennaNet	43-1-454330.....	Werner Schlagnitweit.....	Vienna A
2:313/0	Lower-Austria Net	43-2243-85997.....	Wilhelm Rabl	Klosterneuburg Austria
2:316/0	StyriaNet	43-316-810419.....	Martin Polz.....	Graz A
2:314/0	Upper-Austria Net	43-7223-5966-30	Albert Fischlmayr.....	Kronstorf A
2:259/0	Scottish Net.....	44-241-2793.....	Frank Peterson	Arbroath UK
2:255/0	SouthWest & CI Net.....	44-392-410210.....	John Burden	Exeter UK
2:256/0	Brit Net North	44-434-60-6639	John Rawson.....	Tyneside UK
2:250/0	Northern Net	44-484-653234.....	Chris Townsend.....	Huddersfield
2:251/0	Southern Net.....	44-705-524805.....	Stephen Cole.....	Gosport
2:254/0	London Net	44-71-351-7262	Grant Burch	London
2:440/0	SouthEast Net.....	44-732-845338.....	Colin Spice	Kent UK
2:252/0	South Central	44-734-461466.....	David Rance	Reading UK
2:253/0	Central Net.....	44-905-775191.....	Pete Franchi	Droitwich UK
2:258/0	SDC Host	44-908-690910.....	Kevin Grumball	Milton Keynes UK
2:257/0	Herts/Essex/Suffolk/Cambs/Norfolk Net	44-992-448903.....	Noel Bradford	Broxbourne Herts UK
2:231/0	DaneNet.....	45-31223912.....	Michael Hembo.....	Denmark
2:230/0	DANE TECH	45-32-961764.....	Kim Loeqvist	Denmark
2:234/0	Mosquito Network Ass.	45-44444133.....	Keld Hansen	Denmark
2:206/0	Uppsala-Vasteras Net	46-18-551878.....	Hasse Wigdahl	Uppsala Sweden
2:204/0	Central Net.....	46-19-322816.....	Thomas Stjernstrom	Orebro SE
2:205/0	North Net.....	46-291-10158.....	Anders Brink	Sweden
2:203/0	West Net	46-31-960447.....	Bjorn Felten	Sweden
2:200/0	South Net	46-46-304878.....	Ulf Nilsson	Lund Sweden
2:201/0	Capital Net	46-8-6453882.....	Mats Wallin	Sweden
2:502/0	Norway	47-2-221064.....	Oia Garstad	Oslo Norway
2:480/0	Polish Net.....	48-22-315889.....	Pawel Miasojedow	Poland
2:481/0	North Net.....	48-52-411222.....	Mariusz Boronski	Poland
2:2401/0	Rhein/Ruhr Netzwerk.....	49-203-408799.....	dieter soltau	Duisburg D
2:241/0	UNITED NETWORK OF GERMANY	49-2102-68009.....	Helmut Sauer.....	Germany
2:2402/0	Rheinland Net	49-221-5907407.....	Hartmut Gansen	Germany
2:245/0	Westfalen-Net(t).....	49-2381-889812.....	Wolfgang Schoenrath.....	Germany
2:242/0	AltIPlex Net	49-241-563906.....	Leo Moll	FRG
2:243/0	Big SCIENCE NET.....	49-2624-6626.....	Dietmar Uhr	Germany
2:2403/0	Berlin Net	49-30-4324040.....	Horst Pasche	Berlin
2:240/0	NDS/SLH-NET	49-511-8379986.....	Peter Rohde	Germany
2:248/0	Ara Net Wiesbaden.....	49-611-67538.....	Hans Koehncke	Germany FRG
2:2405/0	Area Net BERGSTRASSE.....	49-6151-710809.....	Frank Altenburg	Bergstrasse FRG
2:247/0	HessenNet	49-6161-2914.....	Stefan Schaffner.....	Germany
2:249/0	Frankfurt Area Net	49-69-7073443.....	Ralf Pradella	Frankfurt/Main Germany
2:244/0	Schwaben-Netz.....	49-7172-2743.....	Axel Golob	Germany
2:246/0	Bavarian Net	49-89-8131695.....	Stefan Rubner	Germany
2:2400/0	Franken Net	49-911-753298.....	Joerg Dassler	Germany
2:478/0	West Russia	7-0112-432686.....	Maksimka Kadenkin	Kaliningrad Russia
2:472/0	NET Siauliai	7-01214-20756.....	Egidijus Levinskas.....	Siauliai Lithuania

INTERNATIONAL FIDO NETWORK LIST OF LOCAL NETWORK COORDINATORS

NET/NODE	NETWORK	DATA PHONE	COORDINATOR	LOCATION
2:471/0	NET Vilnius	7-0122-227194.....	Robertas Sileikis.....	Vilnius Lithuania
2:470/0	NET Kaunas.....	7-0127-706956.....	Sergey Schepetnov	Kaunas Lithuania
2:495/0	Latvia NET	7-0132-284609.....	Ugis Berzins	Riga Latvia
2:490/0	NET Estonia.....	7-0142-237461.....	Tarmo Ausing.....	Tallinn Estonia
2:466/0	Fantasy Net.....	7-0172-706000.....	Sergey Sotnikov	Belarusia
2:462/0	West Ukraine	7-0322-769143.....	Pavel Godlevsky.....	Lvov Ukraine
2:469/0	Moldova Net.....	7-0422-241484.....	Michael Karpov.....	Moldova
2:463/0	Middle Ukraine.....	7-044-4175700.....	Vladimir Leeman.....	Kiev Ukraine
2:467/0	Odessa Net.....	7-0482-242032.....	Oleg Levchenko.....	Odessa Ukraine
2:464/0	Dniepr NET	7-0562-460073.....	Michael Pozin	Dniepropetrovsk Ukraine
2:461/0	North East Ukraine.....	7-0572-432661.....	Oleg Shein.....	Kharkov Ukraine
2:465/0	East Ukraine	7-0622-957214.....	Andrew Kholodenin	Donetsk Ukraine
2:5020/0	NET Moscow Russia.....	7-095-128-4661	Farid Vagapov	Moscow Russia
2:5050/0	Kama river net.....	7-3412-221365.....	Alexander Ermolaev	Izhevsk Russia
2:5080/0	Middle Ural NET.....	7-343-2519251.....	Alex Cooklin.....	Ekaterinburg Russia
2:5010/0	South Ural	7-3512-374550.....	Yuri PQ	Russia
2:5000/0	West Siberian Net.....	7-383-232-4063	Vladimir Lebedev	Novosibirsk Russia
2:5090/0	Enisey River Net	7-391-222-3447	Roman Krasnov.....	Krasnoyarsk Russia
2:5070/0	EastSibNet.....	7-395-233-2457	Anatoly Mashanov	Irkutsk Russia
2:5040/0	Khabarovsk Net	7-421-033-6526	Alex Sherbakov	Khabarovsk Russia
2:5045/0	Vladivostok Net.....	7-423-226-8818	Alexey Yashin	Vladivostok Russia
2:5030/0	NorthWest Net	7-812-126-6972	Michael Bravo.....	St.Petersburg Russia
2:5031/0	North Net.....	7-818-001-1995	Oleg Kalyamin	Archangel Russia
2:5015/0	NiNoNet	7-831-2-235911.....	Gennady Zvonov	Nizhny Novgorod Russia
2:5060/0	South Russia Net.....	7-86344-63702.....	Lev Semenets.....	Taganrog Russia
2:446/0	Georgia	7-8832-958235.....	Temuri Imnaishvili	Tbilisi Georgia
2:430/0	SoftComNet	90-1-2652119.....	Tolga Yurderi.....	Turkiye
2:402/0	HollyNet (02).....	972-2-894-037	Uriel Segal.....	Jerusalem Israel
2:401/0	Tel Aviv.....	972-3-523-7299	Yaron Munz	Tel Aviv Israel
2:403/0	Tel Aviv (03)	972-3-966-7561	Chaim Neuman.....	Tel Aviv Israel
2:405/0	NetWork 052	972-52-919-257	Alon Gingold.....	Ra'anana Israel

ZONE 3 - OCEANIA

3:670/0	Tasmania.....	61-03-44-5855	Roy Austen.....	Tasmania Australia
3:712/0	SYDNEY NET	61-2-314-6932	michael butler	Sydney NSW OZ
3:713/0	Sydney West.....	61-2-626-3802	I Hunter.....	Quakers Hill NSW Australia
3:714/0	WARRINGAH.....	61-2-977-6869	Chris Patten.....	Sydney NSW Australia
3:635/0	Andy's Victorian Net.....	61-3-357-3414	Andrew Gulovsen	Hadfield Victoria Australia
3:634/0	Melbourne's Net 634.....	61-3-509-4417	Andrew Rajcher	Melbourne Victoria Australia
3:636/0	Ezycom Registration Site Oz	61-3-585-0495	Garry Gillard	Melbourne Vic Aust
3:633/0	Melbourne's Most Excellent Network :-)	61-3-752-3949	peter jetson.....	Melbourne Victoria Australia
3:632/0	Melbourne's Bodacious Network!	61-3-792-3507	david nugent.....	Melbourne VIC Aust
3:711/0	SYDNEY NORTH	61-43-23-2275	Kevin Mann.....	Springfield NSW
3:622/0	Greater Newcastle	61-49-58-7046	Stan White	Newcastle NSW
3:620/0	Canberra Net	61-6-285-3151	Basil Chupin	Canberra Australia
3:621/0	Southern NSW Net	61-60-40-1911.....	Ross Wheeler	Lavington NSW AUSTRALIA
3:623/0	NSW COUNTRY NET.....	61-68-69-1754	John Kelly	Peak Hill Australia
3:640/0	Northern Net	61-7-870-2972	Paul Marwick	Brisbane Qld Australia
3:681/0	Adelaide Network.....	61-8-380-5505	Darryl Merritt.....	Inglewood Sth Aust
3:690/0	The Golden State.....	61-9-244-2111.....	Mick Howland	Innaloo WA
3:770/0	Christchurch NET.....	64-3-667-324	John Clarke	CHCH NEW ZEALAND
3:771/0	Wellington NET	64-4-4990-490	Murray Thessman.....	WGTV NEW ZEALAND
3:774/0	Waikato NET	64-7-846-6918	Barry Blackford.....	Hamilton
3:772/0	Auckland NET	64-9-358-8635	Terry Bowden.....	NEW ZEALAND

INTERNATIONAL FIDO NETWORK LIST OF LOCAL NETWORK COORDINATORS

NET/NODE	NETWORK	DATA PHONE	COORDINATOR	LOCATION
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ZONE 4- AMERICA LATINA

4:920/0	FidoNet-Panama.....	507-86-4784.....	Michael Chamberlain.....	Panama City
4:970/0	Red Mexico Centro.....	52-3-621-9932.....	Gamey Garcia.....	Guadalajara Jal
4:971/0	Red Mexico Norte.....	52-83-56-4119.....	Arturo Garza.....	Monterrey NL
4:901/0	Red Gran Buenos Aires.....	54-1-242-4493.....	TEMPORAL.....	Buenos Aires
4:900/0	Red TangoNET.....	54-1-801-3188.....	TEMPORAL.....	Buenos Aires CF
4:902/0	Red Provincia de Buenos Aires.....	54-21-25-7845.....	Cesar Ferri.....	La Plata BA
4:903/0	Red Mediterranea.....	54-586-4-5835.....	Jorge Ljubich.....	Rio Cuarto CB
4:801/0	Rede Paulista Brazil.....	55-11-842-3551.....	Martin Gut.....	Sao Paulo SP
4:802/0	Rede Carioca Brazil.....	55-21-581-4401.....	Lauro Faria.....	Rio de Janeiro RJ
4:803/0	Rede Mineira Brazil.....	55-31-295-1315.....	Jorge Eduardo.....	Belo Horizonte MG
4:804/0	Rede Parana Brazil.....	55-41-226-1834.....	Eduardo Wei.....	Curitiba PR
4:805/0	Rede Sul Brazil.....	55-51-593-3964.....	Fabio Becker.....	Novo Hamburgo RS
4:806/0	Rede Planal Brazil.....	55-61-321-7468.....	Flavio Lucarelli.....	Brasilia DF
4:807/0	Rede Baiana Brazil.....	55-71-244-8764.....	Mauricio Andrade.....	Salvador BA
4:808/0	Rede Nordeste Brazil.....	55-81-268-7682.....	Aloisio Mello.....	Recife PE
4:809/0	Rede Norte Brazil.....	55-85-261-4696.....	Stenio Pita.....	Fortaleza CE
4:880/0	Fido-Santiago.....	56-2-552-0788.....	Juan Ramirez.....	Santiago-Chile

ZONE 5 - AFRICA

5:7711/0	Senegal.....	221-21-7627.....	Moussa Fall.....	Dakar
5:726/0	Mauritius.....	230-464-1773.....	Michael Dewson.....	Reduit
5:751/0	Ethiopia.....	251-1-514412.....	Lishan Adam.....	Addis Ababa
5:731/0	Kenya.....	254-2-567043.....	Doug Rigby.....	Nairobi
5:7321/0	Uganda.....	256-41-532440.....	Charles Musisi.....	Kampala
5:761/0	Zambia.....	260-1-252891.....	Mark Bennett.....	Lusaka
5:721/0	Zimbabwe.....	263-4-728797.....	Phillip Nyahoda.....	Harare
5:7001/0	Botswana.....	267-373461.....	John Case.....	Gaborone
5:7101/0	Transvaal.....	27-12-221-2345.....	Richard Peer.....	Pretoria
5:7105/0	Ofs/N.Cape/W.Tvl.....	27-171-84102.....	Niel Uys.....	Welkom
5:7102/0	West Cape Net.....	27-21-58-7129.....	Sean White.....	Cape Town
5:7103/0	Natal Net.....	27-31-7655045.....	Chris Kenward.....	Durban
5:7104/0	Algoa Net.....	27-41-662491.....	Bryan Haefele.....	Port Elizabeth

ZONE 6 - ASIA

6:609/0	MALAYSIA Net.....	60-3-7741771.....	Louis Su.....	MALAYSIA
6:607/0	INDONESIA Net.....	62-21-6597834.....	Ferry Sukinata.....	INDONESIA
6:750/0	NORTHERN MANILA NET.....	63-2-507-527.....	Tommy Ysip.....	Manila Philippines
6:751/0	SOUTHERN MANILA NET.....	63-2-833-0175.....	Arnold Bagabaldo.....	EDSA Pasay Philippines
6:754/0	Cebu Net.....	63-32-218-911.....	Jojo Syblco.....	Cebu City Philippines
6:753/0	US MILITARY NET.....	63-47-385-3884.....	Bill English.....	Cubi Pt Philippines
6:600/0	SINGAPORE Net.....	65-2410418.....	Wing Lee.....	SINGAPORE
6:608/0	Thailand Net.....	662-2754966.....	David Hanks.....	Bangkok Thailand
6:731/0	MIL NET.....	81-0462-51-1520.....	Steve Thomas.....	Atsugi Japan
6:730/0	FidoNet-Tokyo.....	81-3-3355-4395.....	Kazuyoshi Shinada.....	Tokyo
6:732/0	Fidonet-Kansai.....	81-725-32-7664.....	Patrick Browne.....	Osaka
6:760/0	FidoNet Korea.....	82-2-7918-6495.....	Gordon Ogletree.....	Seoul Korea
6:700/0	Hong Kong Net.....	852-692-0831.....	Louie Chan.....	Hong Kong
6:701/0	MACAU NET.....	853-96-5154.....	Antonio Ho.....	MACAU
6:650/0	Beijing Net.....	86-1-832-2104.....	Roy Luo.....	Beijing
6:720/0	TAIPEI Net.....	886-2-910-4888.....	Gary Chen.....	Taipei TAIWAN
6:723/0	North TAIWAN NET.....	886-3-489-5383.....	C.H Chur.....	ChungLI TAIWAN
6:724/0	Hsin Chu Net.....	886-3-525-5373.....	Tiny Lin.....	HsinChu TAIWAN
6:722/0	Mid TAIWAN Net.....	886-4-833-4885.....	Jhiou-hua Chiou.....	Yuanlin TAIWAN
6:721/0	Tainan Net.....	886-6-250-0280.....	Kevam Shieh.....	Tainan TAIWAN
6:727/0	Kaoshiung Net.....	886-7-747-9923.....	George Jan.....	Kaohsiung TAIWAN

Echomail linked topical conferences, with other bulletin boards. If a conference, for example, was shared among 200 bulletin boards, and on each BBS there were only 2 callers interested in that particular topic, the conference still had a mass of over 400 people discussing cooking, art, politics, or whatever the conference was devoted to. Echomail allowed bulletin boards to regain the critical mass needed for an active conference, while still allowing and even encouraging the rationalization of e-mail conferences.

Today, the FidoNet nodelist contains some 15,649 unique entries, spread across six global zones including North America, Latin America, Europe, Africa, Asia, and Oceania. All but a scant handful of operators run other BBS software that has gained the function of "FidoNet Compatibility". Not only are individual messages and files routed from one system to another, but hundreds of shared store and forward discussion areas, termed Echomail, are passed among thousands of individual BBS across the globe. It is quite ordinary, today, to enter a question in a cooking echomail conference on your local BBS in Albuquerque, and dial back in to the system a few days later to find a reply from someone in Italy - who dialed into a local BBS in Rome. And Tom Jennings is the only individual out of the world of bulletin boards who has ever received a recognized award for technical excellence, the Andrew J. Fleugleman award.

To get from a handful of system operators in San Francisco, St. Louis, and Indiana to over 15,000 systems worldwide today, there were some delicate areas to iron out. But the system remains remarkably simple and effective today.

The three basic elements of FidoNet are the nodelist, the FidoNet Technical Standards Committee specification for communicating within FidoNet (FTSC-001), and national mail hour.

The network is organized into six geographic zones - each with a zone coordinator, originally an appointed position. The six world zones are:

FIDO NODE DISTRIBUTION

1.North America	9500
2.Europe	4420
3.Oceania	693
4.America Latina	165
5.Africa	78
6.Asia	793

Each zone is further subdivided into geographic "regions" - each with a Region Coordinator or RC. There are currently 60 such regions worldwide. Within each region are both networks and independent "nodes". A node in FidoNet is the individual BBS. Local networks are groups of BBS that share telephone expenses to the "outside" - meaning other FidoNet connections a long distance call away. Local networks are administered by a Network Coordinator or NC and currently the average number of nodes in a network within FidoNet is slightly over 30 nodes.

The nodelist is the heart of the system. Published each Friday, it contains a complete telephone directory listing every BBS participating in FidoNet. Each FidoNet BBS receives the updated nodelist and mailer software uses this directory to automatically dial and connect with other systems in the network. As each local network adds systems, the information flows upward from the local network to the region and finally to the zone coordinator who publishes a new updated list each week. Systems not responding during national mail hour are likewise deleted from the list weekly. As such, FidoNet's weekly nodelist is arguably the most accurate BBS list in the world - updated each Friday.

FidoNet started out passing mail at a common time during the night. This was known as national mail hour and occurs at 0900-1000 Universal Coordinated Time - no matter where you are located. In the intervening years, most Fido compatible mail and BBS software have developed the ability to do mail sessions on a 24 hour basis - but the only absolute requirement is that you be up for national mail hour.

As a result, there are only two real requirements to join FidoNet.

- 1. You must run FTSC-001 software capable of interfacing with the network for mail sessions.
- 2. You must have that software active during national mail hour.

Actually joining the network can be a bit of a chicken and egg situation. In theory, you must send a netmail message, using functioning installed FidoNet compatible software, to the local area network coordinator NC for your area, or to your local Regional Coordinator (RC) if you are not close to a local network. They then provide you with a nodelist, and make an update entry into the nodelist for your system. The following week, your system should appear in the FidoNet nodelist and you are part of the network.

Of course, you first have to find the local network coordinator or region coordinator. FidoNet is entirely a volunteer organization and no one receives a salary. There are no national headquarters, offices, or PR firms representing the network. You have to find the local NC yourself.

We've attempted to make this easier by publishing in the accompanying table a complete list of 517 network coordinators worldwide. The list is sorted by telephone number, so prospective FidoNet members can look up the one closest to their geographic location. Using this print format, had we chosen to print the entire 15649 systems - it would require 261 Boardwatch pages - pass.

We've also included a list, by no means all inclusive, of popular mail packages for interfacing bulletin boards to FidoNet.

Mail Software

SEAdog Version 4.61 - \$125
SEAmail Version 1.2 - \$195
System Enhancement Associates Inc.
925 Clifton Ave.
Clifton, NJ 07013
(201)473-5153 Voice
(201)614-9605 Fax
(201)473-1991 SEABoard BBS
1:107/519

BinkleyTerm Version 2.56 - Free for non-commercial use
Bit Bucket Software, Co.
PO Box 460398
Aurora, CO 80046
(303)693-4317 BBS 1:104/501

Intermail - \$99
Interzone Software
9050 Pines Blvd. Suite 430
Pembroke Pines FL 33024
(305)436-4967 voice
(305)436-1085 Interzone Cafe BBS 369/35

The Integrated Mail System (TIMS) for TBBS - \$149
eSoft, Inc.
15200 E. Girard Ave. Suite 3000
Aurora, CO 80014
(303)699-6565 voice
(303)699-8222 eSoft Support BBS

Front Door 2.00 - \$179
Online Communications
22 State Street
Bangor ME 04401
(207)941-1110 voice
(207)990-3511 Support BBS

Fido Software
PO Box 77731
San Francisco, CA 94107
(415)863-2739 - Fido BBS 1:125/111

WILDMAIL! (Fido for Wildcat!) \$45
Online Computer Resources
4330-J Clayton Road
Concord, CA 94521
(510)687-1122 voice
(510)687-7438 fax
(510)687-0236 BBS - 1:161/504

Installing the necessary software to actually perform the FidoNet mail function is a bit of a challenge. Once you have installed your mail software, and send an e-mail message to your local NC, he should respond by sending you a nodelist and a package of information about local net conventions. Once you are in the nodelist, and have your mail software running perfectly (right), you can ask your NC who serves as the local ECHOMAIL COORDINATOR. Normally this will be another sysop in your local net. The echomail coordinator should be able to supply you with a list of all available echomail conferences and explain how you can receive the conferences you desire to carry on your

system. These shared "Echomail" conferences allow your callers to enter into flame wars and p---ing contests with other likeminded individuals worldwide and probably constitutes the biggest advantage to FidoNet membership.

In a survey of six cities performed last year, we determined that on average, **23.73%** of the public dialup bulletin boards in the United States were in the International FidoNet and listed in the FidoNet nodelist. With exactly **9500** unique nodes in the United States listed in the July 31, 1992 nodelist, this would strongly indicate a total of **40,034** publicly operating bulletin board systems in the United States and with **15,649** total FidoNet nodes worldwide - some **65,946** public bulletin boards across the whole pebble.

Despite political squabbles, technology changes, and growing pains, FidoNet has gone from a single BBS to over 15,000 systems in slightly over eight years. Many use it for a variety of purposes. It continues to grow in anarchic fashion through a process we term "de-

fying all reason through better software." While some operators take their FidoNet VERY seriously, most of the old hands in the network realize FidoNet really has only one purpose - it's fun.

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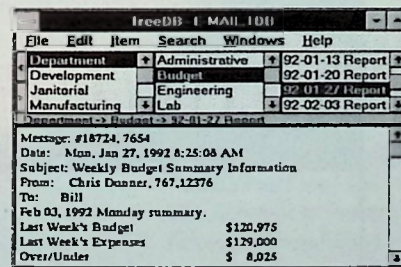
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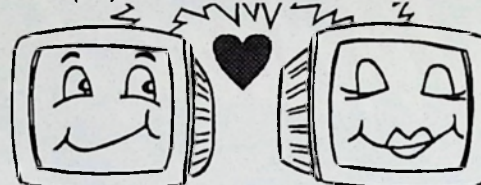
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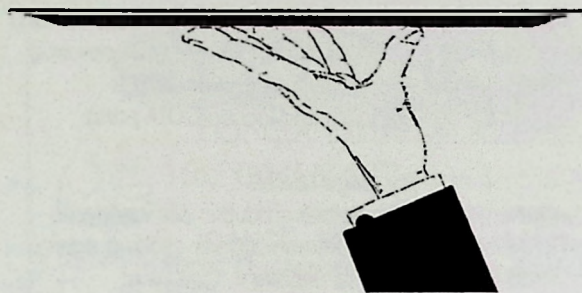
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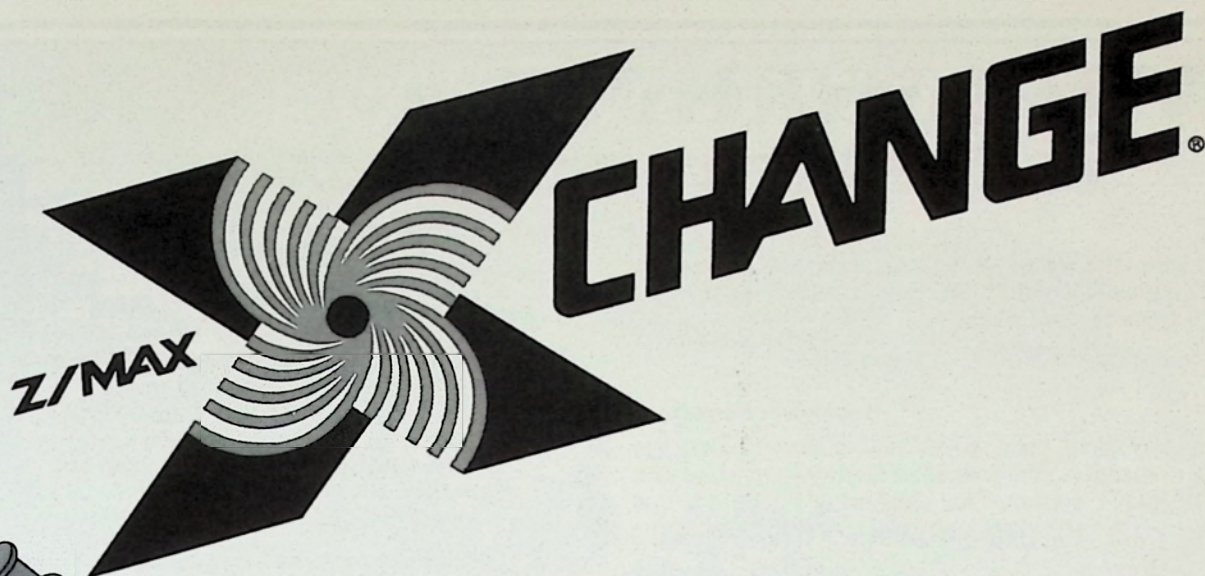
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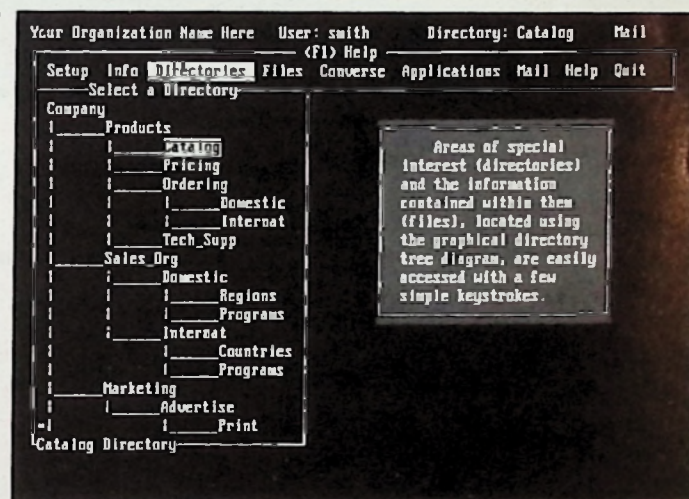
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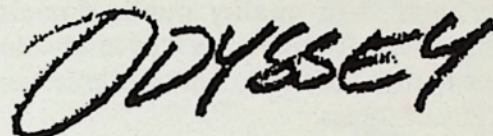
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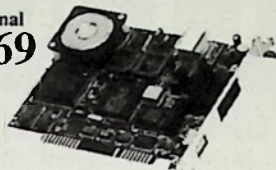
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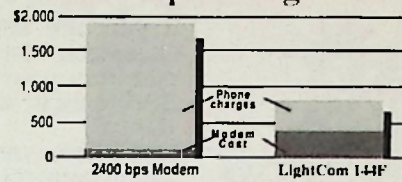


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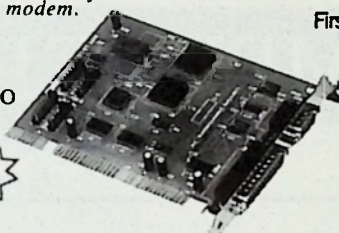
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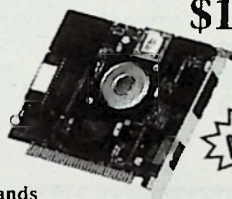


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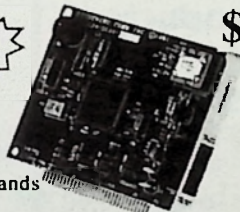
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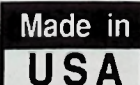
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BOARDWATCH MAGAZINE

NATIONAL LIST OF ELECTRONIC BULLETIN BOARD SYSTEMS AND ON-LINE INFORMATION SERVICES - OCTOBER 1992

SERVICE	PHONE	DESCRIPTION	SPONSOR/SYSOP	LOCATION
65' North	(907)452-1460	DESQview Utilities File Distribution Network 1:17/38	Peter Stern	Fairbanks, AK
ADA 9X Project Bulletin Board	(800)232-9925	ADA Programming Language Revisions and News	Chris Anderson/Susan Carlson	Eglin AFB, FL
ADA Information Clearinghouse	(703)614-0215	Information on ADA Programming Language/Military Specs	Department of Defense	Washington, D.C.
Advanced Data Services Inc.	(301)695-9116	22 line PCBoard with 5.5 GB of Files	Blaine Brodka	Fredrick, MD
AMERICAN CYBERNETICS	(602)968-1082	Multi-Edit Product Support BBS	American Cybernetics	Tempe, AZ
ANAPAC BBS	(913)345-1978	World Radio/TV Handbook - Short Wave Freq Lists/Scheds.	Assoc. of North American Radio Clubs	KS
APCUG - GlobalNet	(408)439-9367	Association of PC User Groups - Over 2000 UG officers	Paul Curtis/APCUG	Scotts Valley, CA
Applied Modeling Research RBBS	(919)541-1325	Environmental Protection Agency Atmospheric Models	William Peterson/EPA	Hurdle Mills, NC
Aquila BBS	(708)820-8344	6 GB 25 Nodes Fidonet/Interlink/Metronet MCE IL/CHI Graphics	Kevin Behrens/Steve Williams/Doug Bell	Aurora, IL
AST Technical Services BBS	(714)727-4723	Superb support system for AST Computer Products	AST Research Inc.	Irvine, CA
AT&T Support BBS	(908)769-6397	Support for PC 6300 and Other AT&T PC Models	American Telephone/Telegraph PC Division	Plainfield, NJ
ATTI Support BBS	(416)756-4591	Support for ATI Modems and Video Cards	ATI Technologies	Scarborough, Ontario
Attention to Details	(714)681-6221	Utilities/ASP/Patrinquin Utis/Protocols	Clint Bradford	Mira Loma, CA
Audiophile Network	(818)998-0452	High-end Audio Components, Music, Video Reviews	Guy Hickey/Quatre Speakers	Van Nuys, CA
Automobile Consumer Services	(513)624-0552	New Car Pricing Reports - Used Car Value Reports	Automobile Consumer Services Inc.	Cincinnati, OH
AviTechnic 1:261/662	(301)252-0717	Software Distribution System - BBS Utilities	Tom Hendricks	Lutherville, MD
BBS America	(214)680-3406	Home of DFW Online Electronic Newsletter	Jay Gaines	Richardson, TX
BBS Press Service	(913)478-9239	Home of Online Digital Music Review	Alan Bechtold/BBS Press Service	Topeka, KS
Best Friends BBS	(714)828-7093	DLX Multiline Chat/Match Social/Sexual	Ann and Joe Wiseman	Fountain Valley, CA
Beyond Eternity	(310)371-3734	Home of EEEK! Bits - Weekly Electronic Trivia Magazine	J. Black/K. Taghadosi	Torrance, CA
Big Peach BBS	(404)446-6650	Home of Automenu and Treeview Software	Marshall Magee/Magee Enterprises	Norcross, GA
Bird Info Network	(303)423-9775	Breeding, Raising, Taming, Exotic Birds	Terry Rume/Dave McClaugage	Arvada, CO
BMUG BBS	(510)849-2684	Support for Macintosh owners - files - conferences.	Berkeley Macintosh Users Group	Berkeley, CA
Boardwatch Magazine Online Info	(303)973-4222	Distribution Service for USA Today/Boardwatch/Newsbytes	Boardwatch Magazine	Littleton, CO
Book BBS	(215)657-6130	Information on 2000 Computer Books - 800 order number	Business & Computer Book Store	Willow Grove, PA
Borland Download BBS	(408)439-9096	Utilities, Macros, Programming Examples for Borland Products	Borland International/Mike Fitz-Enz	Scotts Valley, CA
Bruce's Bar & Grill	(203)236-3761	24-line Social System - Chat - Games - Downloads	Bruce Lomasky	West Hartford, CT
Bucks Telematics 273/201	(215)493-5242	Local, National, International Message Conferences	Richard Press	Yardley, PA
C.A.R.L. Library Service	(303)863-1350	Citations to 4 Million Texts in Colorado Library System FREE	Colorado Alliance of Research Libraries	Denver, CO
CAD/Engineering Service	(615)824-4938	Computer Aided Design File Distribution Network 1:11/6/32	Neil Fleming/Jud Newell	Hendersonville, TN
Canada Remote Systems	(416)798-4713	23GB/400000+ files, 3500 Conf's USENET, IBM/Amiga/Mac more	Capital PC Users Group/Roger Fajman	Mississauga, Ontario
Capital PC User's Group BBS	(301)738-9060	One of the oldest PC User's Groups - 5500 members	Michael E. Connick	Rockville, MD
Castle Tabby 107/412	(908)988-0706	Home of TABBY Fidonet Interface Program for Apple Macintosh	Noel Stookey (Paul of Peter Paul & Mary)	Bradley Beach, NJ
Celebration Station	(207)374-5161	Adventure Games, Chat, and Sigs - Children	US Dept. of Commerce/Nevis Frankel	Blue Hill Falls, Maine
Census Bureau Office Automation	(301)763-4576	Microcomputers and Office Automation	Central Point Software Inc.	Suitland, MD
Central Point Software	(503)690-6650	PC Tools - Central Point Anti-virus support board	Brian Miller/Tess Heder	Beaverton, OR
Channel 1	(617)354-8873	Special Interest Areas for Ferret/Pet Owners, TRS80/Aviation	George Matyaszek	Cambridge, MA
Chicago SysLink	(312)283-0559	UNIX System offering Internet Mail	Randy Suess	Chicago, IL
chinet	(317)359-5199	Online System for Classified Advertisements	Steve Edsall/Trader Newspaper	Indianapolis, IN
Classi Computer Fieds	(619)566-7347	Gifty Girls - Nude GIF Images of the Girl Next Door	Bill Kenyon	San Diego, CA
Classified Connection BBS	(216)368-3888	Cleveland City Info/Public Library - Free Internet Mail Box	Case Western University/AT&T/Ohio Bell	Cleveland, OH
Cleveland Freenet	(619)456-0815	CocoNet Support/Demo - Hires Graphics BBS for Unix Systems	Brian and Patricia Dear	La Jolla, CA
CocoNet	(303)634-4646	Astronomy - 725+ MB of Files	Brian Barte	Denver, CO
Comm-Post, The 104/666	(719)520-4000	News and Entertainment - 17 Lines Community Focus	Klaus Dimmler	Colorado Springs, CO
Community News Service (CNS)	(415)824-7603	Buy/Sell/Trade Compact Audio Discs Online	Wayne Gregori	San Francisco, CA
Compact Audio Disk Exchange	(714)396-0014	Book/Publishing Consultant Nick Anis' BBS	Nick Anis Jr.	Diamond Bar, CA
Computer Business Services	(301)546-1508	Treasure Hunting - Metal Detectors - Online Catalog	Milford P. Webster	Salisbury, MD
Computer Garden	(708)849-1132	First Electronic Bulletin Board - Creator of XMODEM Protocol	Ward Christensen	Chicago, IL
Computerized Bulletin Board Sys	(416)497-5263	Adjunct to Excellent Canadian PC Newspaper	Computing Canada Newspaper	Willowdale, Ontario
Computing Canada Online	(609)683-4422	PR Newswire/Business Wire. Logon: hello user.cdx	Lat-Fountain Research Corp/Ida LaFountain	Princeton, NJ
Corporate Data Exchange (CDX)	(404)740-8428	Product Support for Crosstalk for Windows/MK4/XVI	Digital Communications Associates	Roswell, GA
Crosstalk Communications BBS	(508)263-3857	Online Database of 20,000 Resumes for Engineering	Career Technologies Corporation	Andover, MA
CTC IEEE Employment Database	(508)429-1784	Multiline Service - Ham Radio - Humor - TDBS Applications	Pete White	Holiston, MA
Cul-de-Sac Bar & Grill	(604)526-3676	All lines to v.32bis/v.42/v.42bis. CyberTools for BB'Ses	CyberStore Online Info. Systems Inc.	New Westminster, BC
CyberStore - a COCONET BBS	(408)245-7726	Home of WAFFLE, Unix UUOP BBS Software for DOS and UNIX	Thomae E. Dell/Darkside International	Mountain View, CA
Dark Side of the Moon				

Data Core BBS	(213)842-6880	25 line Major BBS	Matthew Schoen/Delta Enterprises	Los Angeles, CA	
DataLink RBBS System	(214)394-7438	Weather Satellite Imaging, NOAA Satellite Tracking-AMSAT-NA	Dallas Remote Imaging Group/Jeff Wallach	Carrollton, TX	
Dawg Byte	(615)385-4268	ANSI Art Club 1:116/29	Kevin Snively	Nashville, TN	
Denver Exchange, The 104/909	(303)623-4965	Denver's Most Diverse Gay/Lesbian Info Service	James Craig	Denver, CO	
DragonNet 386/451	(409)765-5459	Multiline MAJOR BBS with 4 GB - 64 lines Interactive Games	Robert Michael/Dragon Profit Systems	Gaustown Island, TX	
East Bay X-Change 372/888	(803)556-7485	Home of XRS Offline Mail Reader	Mike Ratledge	McClintanville, SC	
Economic Bulletin Board	(202)377-3870	Economic Statistics/GNP/CPI/Employment, Trade Opportunities	US Department of Commerce	Springfield, VA	
Ed Hopper's BBS	(713)997-7575	Home of uPCB - PCBoard Utility for UUCP Connections	Ed Hopper	Pearland, TX	
Electric Ideas Clearinghouse	(206)586-6854	Energy Efficiency Efforts In Pacific Northwest-HydroElec	Bonneville Power Administration WSE	Olympia, WA	
Energy Info Admin E-Publications	(202)586-8658	Variety of Petroleum/Coal/Electricity Energy Statistics	US Department of Energy	Washington, D.C.	
eSoft Product Support BBS	(303)699-8222	Home of The Bread Board System (TBBS) BBS Software	Phil Becker/eSoft Inc.	Aurora, CO	
Event Horizons	(503)697-5100	64 Line Digitized Graphics Image Library - Adult, GIF files	Jim Maxey	Lake Oswego, OR	
Exchange BBS, The	(713)521-2191	Largest Gay/Bi/Lesbian Multiline BBS in Houston	James Craig/John Fields	Houston, TX	
EXEC-PC	(414)789-4210	Largest BBS in US - 230 Lines - 70,000 files - 7 Gigabytes	Bob Mahoney	Elm Grove, WI	
Executive Network	(914)667-4567	Interlink Netmail National Host - Multiline PCBoard System	Andy Keeves	Mt. Vernon, NY	
Eye Contact BBS	(415)255-5972	22 line Oracom - Gay Issues - Popular Chat System	Bill Montgomery	Mill Valley, CA	
Falken Support BBS	(703)803-8000	Support for FALKEN software - 16 lines - doors - chat	Herb Rose	Woodbridge, VA	
Farwest BBS	(604)381-3934	Large Western Canada Galacticom Info System	Ren L'Ecuier	Victoria, BC	
FAX/Satellite Services BBS	(619)224-3853	NOAA Weather Satellite Images - Russian/Japanese Sat Pics	Scotty Olson	San Diego, CA	
FCC Public Access Link	(301)725-1072	Equipment Authorization Status Advisory Service	Federal Communications Commission	Columbia, MD	
Federal Job Information Center	(313)226-4423	Federal Job Opportunity Lists available online	US Office of Personnel Management	Detroit, MI	
FEDLINK ALIX II	(202)707-4888	Info on Federal Libraries - Excerpts Library of Congress News	Federal Library Information Network	Washington, D.C.	
Fido Software BBS 1:125/111	(415)863-2739	The First Fido BBS and home of Fido BBS 12s	Tom Jennings	San Francisco, CA	
Fido Tech Stand	31-30-735900	Fidonet Technical Information for Holland	J.J. van der Maas	Utrecht, Holland	
FOG City BBS 125/10	(415)863-9697	Gay Community BBS - AIDS Info - Desktop Publishing - MACs	Bill Essex	San Francisco, CA	
Fred the Computer	(508)872-8461	Newspaper BBS - Wierdnet Newswire, List of MA Libraries	Middlesex News-Adam Gaffin	Framingham, MA	
FreeBoard BBS, The	(804)744-0797	Desktop Publishing File Distribut on Network 1:264/212	Bill Hunter	Midlothian, VA	
FSBBS Prototype System	(805)543-8227	Home of FSUUCP and FSBBS - Unix Communications for DOS	Chris Ambler, Fubar Systems	San Luis Obispo, CA	
Fun Connection	(503)753-8431	Multiline Entertainment - 8 Lines Games/Chat/News	Vincent Reece	Corvallis, OR	
Garbage Dump, The	(505)294-5675	Online Chat Service - Adventure Games - National Chatlink	Dean Kerl/Datasafe	Albuquerque, NM	
Gateway Communications BBS	(714)863-7097	Novell Network/TCP-IP Shareware Utilities	Gary Gabrick	Irvine, CA	
GDP Technologies	(303)673-9470	Outstanding IBM Shareware on a small system	Tom Getty's	Lafayette, CO	
General, The	(619)281-8616	Popular File Library - GIF Images	Marc Teitler	San Diego, CA	
GLIB	(303)447-0927	Graphics Information Systems/Mapping topics	Bill Thoen	Boulder, CO	
Greenpeace Environet	(703)578-4542	Gay and Lesbian Information Bureau - 11 Lines - 9600 bps	Community Educational Svcs. Foundation	Arlington, VA	
Hayes Advanced Systems Support	(800)874-2937	Ecological and Peace Issues - Disarmament/Toxics/Wildlife	Dick Dillman/Greenpeace	Norcross, GA	
Heartland Free-net	(309)674-1100	Customer Support Line for Hayes Customers, V-series/Ultra	Hayes Microcomputer Products	Peoria, IL	
Herpet/Satronics TBBS	(215)698-1905	Community Online Service - Free internet E-Mail Boxes	Peoria County Board/Bradley University	Philadelphia, PA	
HI Info-Net BBS	(203)246-3747	Reptile and Amphibian Studies - Poison Snakes/Toads/Fish	Mark Miller	New Hartford, CT	
HomeLine BBS	(410)745-2037	MS Windows and OS/2 Files our specialty	Lee Winsor	St. Michaels, MD	
Hysteries	(613)231-7144	Home Fixup/Repair Tips and Articles	Gene and Katie Hamilton	Ottawa, Ontario	
IBM National Support Center BBS	(404)835-5300	Amiga File Distribution Network 1:163/109	Russell McOrmond	Atlanta, GA	
Inbound/Outbound/Teleconnect	(212)989-4675	Telephone Sales Trade Magazine Online Service	IBM National Support Center	New York, NY	
Index Systems	(404)924-8414	Excellent list of Atlanta BBS systems online	Harry Newton Publications	Marietta, GA	
Infinity World	(606)278-2002	8 line Galacticom System - Many good text publications	Rodney Aloia	Daniel Diachun	Lexington, KY
InfoHost Demo BBS	(201)288-7792	Demo BBS for InfoHost BBS Software - Multiline - Database	A-Comm Electronics Inc.	Hasbrough Heights, NJ	
Infolink for Upper East Tenn.	(615)434-2551	Space Database - Online Store - Chat	John Williams	Johnson City, TN	
Inns of Court, The	(214)458-2620	LAN Related Files and Utilities 1:124/6101	Arthur Geffen	Hillsborough, OR	
Intel PCEO Support BBS	(503)645-6275	46 Lines - 100 Directories - Full Usenet Feed - 8.2 GB	Intel Corporation PCEO Division	New York, NY	
Invention Factory	(212)274-8110	Online Investment/Stock Market Information/Tech Analysis	Mike Sussell	Bellevue, WA	
Investor's Online Data	(206)285-5359	Online Hardware Order - Catalog - 1.1 GB Files - Quizzes	US Dept. of Navy / Chris Buechler	Arlington, VA	
JAG-NET	(408)559-0253	Online Job Listings - 2186 Technical Pos. - 10,000 Corps.	JDR Microdevices	San Jose, CA	
JDR Microdevices BBS	(404)992-8937	OPTIK, TEXT2COM, CBOOT, very good shareware utilities	Alpha Systems Inc./Bill Griffin	Folsom, CA	
JOBS	(914)823-0039	Prime Rate-Fed Funds-T-Bill-Discount Rate-Economic Data	Keith P. Graham	Nyack, NY	
Keith Graham Shareware Support	(612)340-2489	400 MB Books, Writers Area - TRS 80 Support	Federal Reserve Bank of Minneapolis	Minneapolis, MN	
KIMBERLY BBS	(303)665-6091	Support for LANtastic local area network	Jim and Karen Burt	Boulder, CO	
King's Market BBS 104/115	(602)293-8065	Home of UFGATE - Software to connect PCs to UUCP/Usenet	Artisoft Inc.	Tucson, AZ	
LANtastic BBS	(415)695-0759	Support for Leading Edge Computer Owners	Tim Pozar	San Francisco, CA	
Late Night Software 125/555	(508)836-3967	Legal Issues/Forms - Law BBS List	Leading Edge Computer	Westborough, MA	
Leading Edge Auto Info Line	(509)326-3238		Bill Sordelli	Spokane, WA	

BOARDWATCH MAGAZINE

NATIONAL LIST OF ELECTRONIC BULLETIN BOARD SYSTEMS AND ON-LINE INFORMATION SERVICES - OCTOBER 1992

SERVICE	PHONE	DESCRIPTION	SPONSOR/SYSOP	LOCATION
Lightning Communications Support	(714)457-9429	Support for Lightning Modems	Lightning Communications	Aliso Viejo, CA
MAC-LINK	(514)935-4257	Macintosh Oriented Support BBS - 6 Lines - Infomat/BIX	Mark Smith	Montreal, Quebec
Macalot Bulletin Board	(412)846-5312	Support for Second Sight BBS Software for Macintosh	Jeff Dripps/FreeSoft Company	Beaver Falls, PA
MacInternational	(803)798-3755	Largest MAC BBS on East Coast	Ralph Yount	Columbia, SC
Magpie BBS	(212)420-0527	Support/Demo System for Magpie BBS/Conferencing Software	Steve Manes	New York, NY
MaxiHost Support BBS	(209)836-2402	MaxiHost BBS - small, very easy to run BBS	Don Mankin	San Ramon, CA
McAfee Associates BBS	(408)988-4004	Computer Virus Information - VIRUSCAN and CLEANUP Programs	John McAfee/CVIA	Santa Clara, CA
METRO Online Entertainment	(212)831-9280	32 line DLX with City Guide/Ski Database - Matchmaker - Chat	Bruce Kamm/Metro Online Services	New York City, NY
Micro Foundry, The	(415)698-0398	2.2 GB Downloads - Your Online Software Source - Boardwatch	Thomas Nelson/Clockwork Software	San Jose, CA
Micro Message Service	(919)779-6674	USA Today/Boxoffice Magazine - Large Download Area	Mike Stroud	Raleigh, NC
Micro Teen BBS	(314)334-6359	Support for OSIRIS Multiline BBS Software - IRIS Mail	Micro Tech	Cape Girardeau, MO
Microlink B	(303)972-9600	Over 2.5 GB of IBM Software - Multiline - USA Today News	Girard Westerberg	Littleton, CO
Micromim Technical Support BBS	(206)649-9836	Support for Popular R:Base Relational Data Base System	Micromim Corporation	Redmond, WA
Microsoft Download BBS	(206)938-6735	Windows Technical Notes and Support Information	Microsoft Corp/Scott J. Honaker	Bellevue, WA
Microsystems Software Inc.	(508)875-8009	HandWare Software for Handicapped - CodeRunner C Utilities	MSI - Reed Lewis	Framingham, MA
Midwest MIDI 1:147/1007	(405)733-3102	MIDI Distribution Net - MIDI sequences and files	John Fordenbacher	MWC, OK
Minnesota Spacecnet	(612)920-5566	Minnesota Space Frontier Society - NASA News	Ben Husset	Minneapolis, MN
MOG-UR'S EMS, The	(818)366-1238	5 Lines - 8 Networks CD-ROMS - 2.8 GB Hub Services HSTN.32	Tom Timpidis	Granada Hills, CA
Movie BBS	(718)939-5462	Movie Reviews and Information - Television	Clarke Ulmer	New York, NY
N.A.C.D. BBS	(912)246-3280	Cave Scuba Diving - Superb Special Topic System	National Assoc. of Cave Divers	Gainesville, FL
N8EMR Ham BBS	(614)895-2553	login:hbbs HAM Radio/AMSAT Unix System - Satellite/Packet	Gary Sanders	Westerville, OH
NAPLPS Graphics BBS	(613)727-5272	NAPLPS Graphics Terminal and Editor Software	MicroStar Corp.	Nepean, Ontario
NARDAC BBS	(804)445-1627	Zenith Computer Support - List of Federal Micro User Groups	Navy Regional Data Automation Center	NAS Norfolk, VA
NASA Headquarters Info Tech	(202)453-9008	Shareware and Technical Info for NASA PC users	National Aeronautical and Space Admin.	Washington, DC
NASA SpaceLink	(205)895-0028	NASA Educational Affairs Div. - Flight Data/Space History	Marshall Space Flight Center	Huntsville, AL
Nashville Exchange	(615)383-0727	12 line TBBS - Games/TBBS Software Development 1.8 GB	Ben Cunningham	Nashville, TN
National Agricultural Library	(301)344-8510	Agricultural Info/Research Resources	US Department of Agriculture	Beltsville, MD
National Genealogical BBS	(703)628-2612	Family History - Genealogical Research - Gravestone Haunting	National Genealogical Society	Arlington, VA
NAVWESA	(202)433-6639	Naval Weapons Engineering Support	Dept. of Navy / Bill Walsh	Washington, D.C.
Netcom Internet Guest System	(408)241-9760	Internet Access System - type "guest" at login for info.	Netcom Online Communications Services	San Jose, CA
Network World Bulletin Board	(508)620-1178	LAN and WAN Issues and Technology	Network World Magazine/CW Communications	Framingham, MA
Neuropsychology Bound 157/3	(216)356-1431	Support Groups for Disabled/Physically Impaired	Butch Walker	Rocky River, OH
NIST ACTS	(303)494-4775	Automated Computer Telephone Service - Sync PC to NBS Time	Nat. Institute for Standards/Technology	Boulder, CO
Nixpix	(303)920-1263	Large Library of Adult GIF Graphics Images	Nick De Wolf	Aspen, CO
NOAA Space Environment Lab	(303)497-5042	Solar Flare/Geomagnetic Data Online	Mike Neuhaus Gus Smedstad	Boulder, CO
NoGate Consulting	(616)530-3392	Home of PAK archive utility	The Mitchell Group	Grand Rapids, MI
Numisnet	(301)498-8205	Collecting of Coins, Medals, and Exonumia	Environmental Protection Agency	Laurel, MD
OACPSSTN	(919)541-5742	Air Quality Planning and Standards Technology Transfer Net	Robert Orr/Online Atlanta Society	Decatur, GA
OASIS BBS	(404)627-2662	Home of Atlanta Bulletin Board List - ABBL	Mike McCann/Center for Safety in Arts	New York, NY
Occupational Health/Safety BBS	(212)385-2034	Job Safety Issues for Artists, Musicians, Entertainers	Michael Allen	Monrovia, CA
Odyssey	(818)358-6968	Adult Multiline Chat System - Games - Magazines - Downloads	US Department of Education	Washington, D.C.
OERI BBS	(800)222-4922	Educational Statistics and Data - Performance Stats -	Dave Hughes	Colorado Springs, CO
Old Colorado City Communications	(719)632-4111	Political Discussions - Unix UUCP Public Access - Multiline	Gary Walsh/Tom Haavisto	Thunder Bay, Ontario
Online Now	(807)345-5522	700 Megs plus 5 CD-ROMS plus 6 MB New Software per Week	Hayes Microcomputer Products	Norcross, GA
Online With Hayes	(404)446-6336	Hayes Public Bulletin Board - Conferences/SIGS/Support	Don Crago	Pooraka South Australia
Oracle PC	(6108)260-6222	South Australian TBBS Multiline System	Surf Computer Services	Rancho Mirage, CA
Oracom Support BBS	(619)346-1608	Sales and Support for Oracom Multiline BBS Software	Fran and Norm Saunders	Colesville, MD
Osprey's Nest	(301)989-9036	Birdwatching, Bird feeding, Naturalist/Ecology Issues	James Toro	Hicksville, NY
P.D.S.L.O. BBS	(516)938-6722	Home of THE LIST National BBS List	Gwyn Reedy/PacCom Inc.	Tampa, FL
PacComm BBS	(813)874-3078	Packet Radio Equipment Supplier - TNC/PSK Modems	Univ. of Mass. Dept. of Physics/Astronomy	Cleveland, OH
PC Ohio	(216)381-3320	Shareware library with 100% USR HST access - 24 lines	Craig Baker	Amherst, MA
PHYSICS Forum BBS	(413)545-1959	Physics and Astronomical Sciences	Timothy Campbell/Pinnacle Software	Pinecliffe, CO
Pinecliff BBS 104/28	(303)642-7463	Large Shareware Library/Echomail Conferences since 1985	Phil Katz/PKWare Incorporated	Montreal, Quebec
Pinnacle Software BBS	(514)345-8654	Support for Sapphire BBS Software	Tom Terrific	Glendale, WI
PKWare BBS	(414)354-8670	Home of PKZIP 1.10 Compression Utility		Tidewater, VA
Pleasure Dome	(804)490-5878	Sexually Explicit Fantasy Chat System - Adults only		

Practical Peripherals BBS	(818)706-2467	Support BBS for Practical Peripherals Modems	Practical Peripherals	West Lake Village, CA
ProComm Support BBS	(314)875-0503	Home of ProComm 2.4.3 and ProComm Plus Comm Prgrms	Thomas Smith/DataStorm Technologies Inc.	Columbia, MO
Promised Land, The	(715)387-1339	16-Line/2.5GB/11,000+ Files/ WINDOWS, Chat & More	Tim Brown/Computer Solutions	Marshfield, WI
Public Band Software BBS	(317)856-2087	Commercial Shareware Vendor	Public Brand Software	Indianapolis, IN
Public Data Network	(503)474-6662	64-line System with \$2.50/hour Local Access	Tony Javoric/Public Data Network	Grants Pass, OR
QMail Deluxe Support BBS	(901)382-5583	Support for QMail - offline conference mail reader	Mark (Sparky) Herring	Germantown, TN
Qualitas, Inc. BBS	(301)907-8030	386MAX and BlueMAX Memory Management Software Support	Qualitas Inc.	Bethesda, MD
QuickBBS Support BBS 363/34	(407)896-0494	Product Support for QuickBBS Software	Richard Creighton/Steve Gabriowitz	Orlando, FL
Random Access Information Svc.	(503)695-3250	11,000 GIF Images - 20,000 DOS/Windows Shareware Files	Janice Stevens	Corbett, OR
Rose Media	(416)733-2780	19 GB - Home of Rosemail - Publications/Conferences	Vic Kass	Willowdale, Ontario
Rusty & Edles	(216)726-0737	Large ML PCBoard run by Husband and Wife - NFL/TradeWars	Rusty and Edwina Hardenburgh	Boardman, OH
Salt Air BBS	(801)261-8976	Home of PCBoard BBS Software - National List of PCB Sys	Clark Development Company/David Terry	Murray, UT
San Diego NeXT User's Group BBS	(619)456-2522	Support for NeXT Computers	Brian Dear/San Diego NeXT User's Group	San Diego, CA
Science Resource Studies BBS	(202)634-1764	Federal R&D Budget - Technical Labor Market Statistics	National Science Foundation	Washington, D.C.
SDN Project, The 1:14/840	(203)634-0370	The Original Software Distribution Network	Ray Kaliss	Meriden, CT
SEABOARD	(201)473-1991	Support system for ARC, SEADOG, and AXE software.	System Enhancement Associates	Wayne, NJ
Seagate Technical Support BBS	(408)438-8771	Installation and Specifications for Hard Drive Models	Seagate/Bill Rudok	Scotts Valley, CA
Searchlight BBS	(516)689-2566	Support system for Searchlight BBS Software	Searchlight Software	Stony Brook, NY
SemWare Support BBS	(404)641-8968	Home of QEdit - A Superb Shareware Text Editor	Sammy Mitchell/SemWare Software Products	Marietta, GA
SIGCAT BBS	(703)648-4168	CD-ROM/Optical Publishing Info - Lists of Gov. CD Data	SIG on CD-ROM Applications and Technol.	Gathersburg, MD
Sistema Profesional Informacion	(525)590-5988	Largest BBS in Mexico - Spanish Language TBBS	Tecnologia Uno Cero S.A. de C.V.	Mexico City
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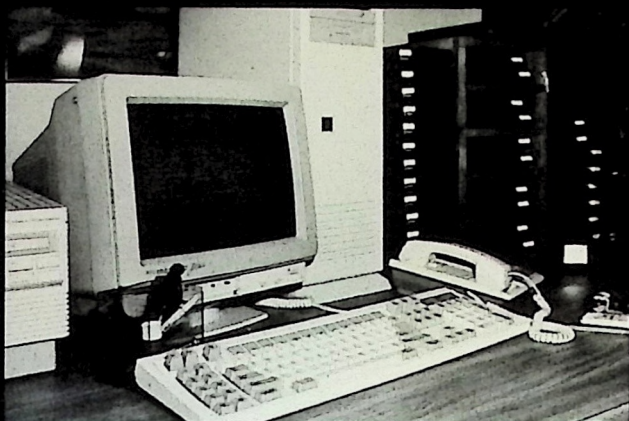
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